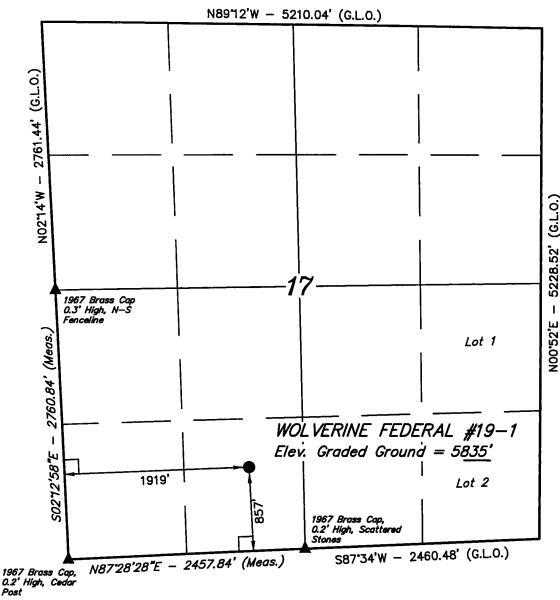
# JEIDENTIAL" STATE OF UTAH DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS AND MINING

AMENDED REPORT (highlight changes)

FORM 3

	A	PPLICA	TION FOR	PERMIT TO	DRILL	utu-735	28 4	. MINERAL LEASE NO: -46605	6. SURFACE:
1A, TYPE OF WO	rk: DF	RILL 🔽	REENTER [	DEEPEN			7	. IF INDIAN, ALLOTTEE OF	TRIBE NAME:
B. TYPE OF WEI	<del></del>		OTHER		SLE ZONE	MULTIPLE ZON	-1 11 1	. UNIT of CA AGREEMENT	
	b. The bot Weet.						Wolverine Fed. E		
		Company	of Utah, LLC					Wolverine Feder	
3. ADDRESS OF	OPERATOR:			100	:02	PHONE NUMBER: (616) 458-1150		o. FIELD AND POOL, OR V Wildcat	MLDCAT:
One Riverfr	Ont Plaza		d Rapids <sub>STA</sub>	TE MI ZIP 495	<del>003</del>	(610) 430-1130		1. QTR/QTR, SECTION, TO	OWNSHIP, RANGE,
			T020 D4V	V, Sec 17 $S^{ES}$	ω		١.	MERIDIAN:	00 4144
AT SURFACE: AT PROPOSED	PRODUCING ZON	. 1,919 FW 4≘: 660' FN	L & 660' FEL	- T23S-R1W,	Sec 19 N	ENE	]	NENE 19 23	S 1W
14 DISTANCE IN	MILES AND DIRE	CTION FROM NE	AREST TOWN OR PO	ST OFFICE:			<del>-  </del> ,	2. COUNTY:	13. STATE:
	South of Sig						- 1	Sevier	UTAH
	NEAREST PROP		LINE (FEET)	16. NUMBER OF	ACRES IN LE	NSE:	17. NUM	BER OF ACRES ASSIGNE	D TO THIS WELL:
appr. 400'			, ,			8,236 ac			40
18. DISTANCE TO	NEAREST WELL	(DRILLING, COM	PLETED, OR	19. PROPOSED	DEPTH:	-	20. BON	D DESCRIPTION:	
appr. 30'	R) ON THIS LEASE	(FEET)				7,550		1 # WY 3329	
21. ELEVATIONS	(SHOW WHETHE	R DF, RT, GR, ET	C.);	22. APPROXIMA		K WILL START:		MATED DURATION:	
GR-5,835	<b>'</b> '			9/15/200	4		40 d	ays	
24.			PROPOS	ED CASING A	ND CEME!	NTING PROGRAM			
SIZE OF HOLE	CASING SIZE,	GRADE, AND WE	IGHT PER FOOT	SETTING DEPTH		CEMENT TYPE, QU	ANTITY, YI	ELD, AND SLURRY WEIGH	ſГ
20	14			80	Conduct	or			
12 1/2	9 5/8	36 ppf	J55 STC	1,510	lead:c,36	60sx,1.78,	12.8/ta	ail:g, 280sx,1.2	0, 15.6
8 3/4	5 1/2	17 ppf	L80 LTC	7,550	lead:Poz	,750sx,1.76, 13	.0/tail:l	Poz, 350sx,1.4	9, 13.4
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							JU	<b>AUG</b> - 5 2004	
25.				ATTA	CHMENTS			FOU GAS&A	AINING
	LLOWING ARE AT	TACHED IN ACCO	ORDANCE WITH THE	UTAH OIL AND GAS C	ONSERVATION		DIV O	- OIL, GAS & A	
WELL PI	AT OR MAP PRE	PARED BY LICENS	SED SURVEYOR OR	ENGINEER		OMPLETE DRILLING PLAN			
					15.	ORM 5, IF OPERATOR IS PI	ERSON OF	COMPANY OTHER THAN	THE LEASE OWNER
X EVIDEN	CE OF DIVISION O	F WATER RIGHT	S APPROVAL FOR U	SE OF WATER			_1.00m Gr		
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(11/2001)	. 1	this #	Oll. G	as and Win	ns or Reverse	-111.93			11.9428
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Action	Approvation	•	10	64, 04	11/11	4			

# T23S, R1W, S.L.B.&M.



#### LEGEND:

\_ = 90' SYMBOL

= PROPOSED WELL HEAD.

= SECTION CORNERS LOCATED.

#### BASIS OF BEARINGS

BASIS OF BEARINGS IS A G.P.S. OBSERVATION.

(AUTONOMOUS NAD 83)

LATITUDE =  $38^{47}51.34^{\circ}$  (38.797594)

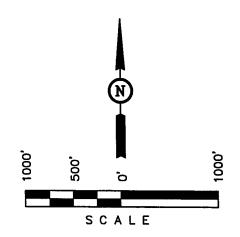
LONGITUDE = 111'56'05.14" (111.934761)

#### WOLVERINE GAS & OIL CORP.

Well location, WOLVERINE FEDERAL #19-1, located as shown in the SE 1/4 SW 1/4 of Section 17, T23S, R1W, S.L.B.&M., Sevier County, Utah.

#### BASIS OF ELEVATION

SPOT ELEVATION LOCATED NEAR A ROAD IN THE SW 1/4 OF SECTION 17, T23S, R1W, S.L.B.&M., TAKEN FROM THE SIGURD QUADRANGLE, UTAH, SEVIER COUNTY, 7.5 MINUTE SERIES (TOPOGRAPHICAL MAP) PUBLISHED BY THE UNITED STATES DEPARTMENT OF THE INTERIOR, GEOLOGICAL SURVEY. SAID ELEVATION IS MARKED AS BEING 5774 FEET.



#### CERTIFICATE

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY WE OF UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CONSECT TO THE BEST OF MY KNOWLEDGE AND BELIEF

REVISED: 7-7-04 REVISED: 5-27-04 HECKER PROBE HELDING

UINTAH ENGINEERING 65 85 SOUTH 200 EAST - VE

VERMANUSTAH 84078

(435) 789-1017

SCALE 1" = 1000'	DATE SURVEYED: 3-4-04	DATE DRAWN: 3-10-04				
PARTY G.O. D.J. C.G.	REFERENCES G.L.O. PLA	REFERENCES G.L.O. PLAT				
WEATHER COOL	FILE WOLVERINE GA	AS & OIL CORP.				



## III. EXISTING ACCESS ROADS AND ROAD IMPROVEMENTS

The existing access road is identified and labeled on the project map. Steep, rough topography is not identified as a problem along our access route which was constructed by initially using fill material and covering it with approximately eight (8) inches of shale/gravel. Another layer of road base material, approximately four (4) inches in depth, was placed on top of the shale/gravel.

#### IV. LOCATION OF EXISTING WELLS

The recently drilled "King Meadow Ranches 17-1" well is situated approximately one-half mile northerly of this proposed well site location and is situated in the Southeast Quarter of the Northwest Quarter (SE/NW) of Section 17, Township 23 South, Range 1 West, Sevier County, Utah. "Wolverine Federal 17-2" is located approximately 28.3 feet southwesterly of this proposed well site and is situated in the Southeast Quarter of the Southwest Quarter (SE/SW) of Section 17, Township 23 South, Range 1 West, Sevier County, Utah.

#### V. DRILLING METHOD

Wolverine proposes to use a directional drilling program for the Wolverine Federal #19-1. The mountainous terrain of the area is such that directional drilling is the most efficient method to minimize surface disturbance. By locating the well pad on a relatively flat surface, and drilling a directional well beneath this challenging topography, Wolverine can most effectively minimize surface disturbance and ensure proper utilization of resources.

#### VI. LOCATION AND TYPE OF WATER SUPPLY

Water for drilling the Wolverine Federal #19-1 will be purchased from water wells nearby or drilled on location and pumped into storage tanks at the site. Water for drilling from nearby well(s) will be hauled to or pumped on location and stored in storage tanks on the drill site. Wastewater will not be discharged on the surface at this site and the drilling of the well will not require a wastewater management plan.

#### VII. CONSTRUCTION MATERIALS

In most circumstances, natural earth materials were used for the construction of roads and fills. These were taken from locations essentially contiguous to or nearby the

locations to be improved. When necessary, road base materials were used and delivered by the contractor for application on site and specifically as the initial fill material for the access road, which was then covered with approximately eight (8) inches of shale/gravel.

#### VIII. METHODS FOR HANDLING WASTE

The Reserve Pit was constructed on the well pad per the attached Well Site Location Layout (Attachment B). It will be used for the disposal of waste mud and drill cuttings and is located on the west/southwesterly portion of the well site plan. The pit dimensions are 125 feet X 225 feet and will be 10 feet deep. The pit was lined with a synthetic liner having a minimum thickness of 12 mills. Rules pursuant to R649-3-16 will be followed regarding the reserve pit as well as those governing Onshore Oil and Gas Operations (43 CFR 3160.)

Upon evaporation of fluids, pit closure occurs with the back fill of soil and its compaction to prevent settling. The usage of the pit is further described in the section VIII under pit closure.

All garbage will be taken off site and disposed of properly. Pursuant to R649-3-14, all rubbish and debris shall be kept in containers on the well site, and will be hauled to an approved disposal site upon completion of drilling and completion operations and as needed during such operations. There will be no chemical disposal of any type. Sewage is handled through the renting of portable toilets. These are serviced by the rental company and removed from site when no longer required.

#### IX. PLANS FOR RECLAMATION OF THE SURFACE

<u>Pit closure:</u> The pits will be fenced on three sides during all drilling operations and then the fourth side will be immediately fenced when the rig is moved off location. After evaporation of fluids, back-fill of sub-soil and compaction to prevent settling will occur within 90 days of the drilling and completing of the well. If necessary after 90 days, the fluids will be sucked out of the pit and transported off site.

The topsoil was stripped off and stock piled in an area not to be disturbed. The topsoil will be placed back on the pit after back filling and then prepped for re-seeding.

The approximate Pit size is indicated on the Well Site Location Layout diagram attached hereto (Attachment B).

Revegetation Methods: Disturbed areas will be disked, seeded and "dragged", as needed; seeding with a mixture approved by the local USDA Natural Resource Conservation Service or the Bureau of Land Management.

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Project Plan of Develo, ent & Surface Use Plan Wolverine Gas & Oil Company of Utah, LLC Wolverine Federal #19-1

Wolverine generally requires at least twelve (12) pounds per acre of seed distribution. Wolverine suggests that autumn seeding practices be used due to the terrain in this project area. Spring rain events are common and tend to cause severe run-off. Fall seeding will allow any moisture, whether rain or snow, to assist the seed into the ground.

Other Practices: Other practices that will be utilized to reclaim disturbed areas will include riprap when and if necessary to prevent erosion and the installation of silt fencing in sensitive and/or erosive areas.

<u>Timetable:</u> Reclamation of the surface will commence as soon thereafter construction, drilling and well completion are concluded, as is practicable, depending on weather. In the event of a dry hole, the drill site and roadways will be restored to their original condition as nearly as practicable within 180 days after plugging date of the well.

#### X. SURFACE OWNERSHIP

The surface of the proposed well site is federally owned and is administered by the Bureau of Land Management, United States Department of Interior.

#### XI. WELLSITE LAYOUT

Please see the attached "Well Site Location Layout" (Attachment B) for the well configurations.

#### XII. PIPELINES AND STREAM CROSSINGS

PIPELINES: In the event of hydrocarbon production requiring transmission by pipeline, the proposed pipeline(s) will be designed, constructed, tested, operated and maintained in accordance with standard safety practices and by a combination of construction techniques intended to minimize to the greatest extent practical the impacts upon natural resources.

Pipelines will typically be installed by trenching. In these trenched areas, the contractor shall strip and stockpile topsoil to be replaced over the backfill portion upon completion of construction operations. Silt fencing will be installed at all stream crossings.

The proposed pipelines will be constructed with a combination of methods intended to minimize impacts to private, state and federally owned property, county roads and natural resources. The pipeline will be constructed by a combination of conventional construction techniques and special measures designed to minimize impacts to natural

Project Plan of Develo 2nt & Surface Use Plan Wolverine Gas & Oil Company of Utah, LLC Wolverine Federal #19-1 CONFIDENTIAL

resources. Pipelines will be adequately compacted before the topsoil is replaced for reseeding.

In general and where required, soil erosion control measures will consist of appropriate BMPs (Best Management Practices) to reduce the potential for erosion. The BMPs that will be utilized in upland areas include use of construction barriers where appropriate, land clearing, spoil piles, staging and scheduling, seeding and mulching. Note that spoil piles will not typically be seeded since exposure of the spoil piles should be minimal in time. All other proper BMP measures will be implemented to reduce the potential for erosion. Seeding of all raw soils after burial of pipe will be performed. However, mulching will be performed only within state or county road right-of-ways.

Generally speaking, in wetlands, appropriate BMPs will be implemented to minimize the potential for soil erosion and point source pollution within wetland construction zones. These measures shall include, but not be limited to, clearing, barriers, staging, filters, silt fencing, spoil piles, dewatering, seeding, and mulching.

#### XIII. GENERAL

TIMELINE: The following is a general order of construction and sequence of earth change by which our operations will proceed:

- 1.) Access Road and Well Pad Construction
- 2.) Drilling and Well Completion Operations
- 3.) Initial Well Pad Restoration
- 4.) Clearing of Pipeline Rights-of-way (if needed)
- 5.) Delivery and Layout of Pipe
- 6.) Pipe Welding and Inspection
- 7.) Trenching of Pipe
- 8.) Placement and Burying of Pipe
- 9.) Final Restoration of Site/Access/Pipeline Route
- 10.) Re-Seeding

All hillsides, creek banks, and other places where contractor has moved earth to facilitate operations shall be restored to as near original condition as practical. Replaced

Project Plan of Develo ent & Surface Use Plan Wolverine Gas & Oil Company of Utah, LLC Wolverine Federal #19-1



material and/or backfill will be protected from erosion to the satisfaction of Wolverine, the Bureau of Land Management and the Utah Division of Oil, Gas and Mining without undue delay.

Upon completion of any backfill, contractor shall clear pipeline rights-of-way and access routes of large rocks, stumps and other debris; fill holes, ruts and depressions, and shall keep the access road in a neat and acceptable condition. All cleanup shall be maintained by the contractor until final acceptance by Wolverine and the enforcing agency.

#### XIV. ENVIRONMENTAL IMPACT ASSESSMENT:

It is anticipated that the drilling and operations planned, provided the success of this well, will not have any adverse affects to any wildlife or aquatic life in the area. There will be only a minor effect on the surface cover. Drilling and production operations should have minimal effect on the population patterns, land use, public utilities or public services in the near future for this rural area.

Noise levels during drilling and completion operations may be continuous but not unusually high. If production is achieved, noise levels should be minimal during the operation and maintenance of the wells.

Necessary soil erosion and sedimentation safeguards will be built into the well pad, access and future proposed pipeline routes to protect any nearby lowlands, where appropriate. Particular care will be exercised in order that all drain ditches be maintained and kept unobstructed to prevent water backup against spoil banks or backfill, causing erosion. The cumulative long-term effect on the immediate environment should be minimal.

If the well is productive, the effect on the air quality in the area is expected to be practically non-existent. Human activity in this area is somewhat limited, due to the nature of the location. Ranching operations and any activities in the area should not be adversely affected.

The site will then be contoured as closely as practical to its natural state, fine graded and stabilized. The well site and access route will be restored as soon as practical. If a well is productive, existing dikes will be maintained and erosion control procedures, as specified and required by the Bureau of Land Management, will be followed to insure protection of the local ecosystem.

#### Cultural

Please see, "Attachment E", Cultural Resource of A Well Pad and Access Route Near Sigurd, Sevier County, Utah.

Project Plan of Develo and & Surface Use Plan Wolverine Gas & Oil Company of Utah, LLC Wolverine Federal #19-1



Wildlife

Please see "Attachment D", a summary of Wildlife and Vegetative Species of Concern.

#### XV. SUMMARY:

In conclusion, the environmental impact of this project is considered to be minimal and every effort will be made to ensure the protection and preservation of the environment, as well as the standard of living for those affected by its operation.

This proposed project is aimed at increasing the hydrocarbon reserves within the State of Utah. In addition, in the event that production can be established in this project, it will be of financial benefit to the private holders of oil and gas rights within the "Wolverine Federal Exploration Unit", including the Bureau of Land Management in fulfillment of its stewardship responsibilities over federally owned oil and gas assets. We consider the environmental impact of this project to be slight and we will make every effort to be conscientious operators and to insure protection and preservation of the environment during the course of our drilling and producing operations.

Sincerely,

Wolverine Gas and Oil Company of Utah, LLC

Shawn Burd

Authorized Permitting Agent:

Western Land Services – Western Division

54 West Seymour Street Sheridan, WY 82801

Donald L. Anderson, Chief Operating Officer

Phone: 307-673-1817

Local Contact: Shawn Burd

Phone: 435-896-1943



#### **BOND STATEMENT**

Bond coverage pursuant to 43 CFR 3104 for lease activities is being provided by Wolverine Gas and Oil Company of Utah, LLC with their Bond, filed with Bureau of Land Management in the amount of \$25,000.

The Bond Number is WY3329

#### OPERATOR'S REPRESENTATIVE AND CERTIFICATIONS

The responsible field representative for the Wolverine Federal #19-1, on behalf of Wolverine Gas and Oil Company of Utah, LLC, is Steve Hash, PE, available via Wolverine Gas and Oil Company of Utah, LLC, One Riverfront Plaza, 55 Campau NW, Grand Rapids, MI 49503. (616) 458-1150.

I hereby certify that I, or persons under my direct supervision, have inspected the drill site and access route; that I am familiar with the conditions that currently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and that the work associated with operations proposed herein will be performed by Wolverine Gas and Oil Company of Utah, LLC and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provisions of 18 U.S.C. 1001 for the filing of a false statement.

Date:

July 28, 2004

Name and Title:

Richard Moritz, Vice-President, Land and Legal

BLM Bond No. WY3329

## OPERATOR RIDER

This rider is being submitted to comply with 43 CFR 3104.2 which states "... The operator on the ground shall be covered by a bond in his/her own name as principal, or a bond in the name of the lessee or sublessee, provided that a consent of the surety, or the obligor in the case of a personal bond, to include the operator under the coverage of the bond is furnished to the Bureau office maintaining the bond."

The obligor hereby agrees to extend the coverage of their bond to include liabilities for operations conducted by Wolverine Gas and Oil Company of Utah, LIC and Wolverine Gas and Oil Company of Wyoming, LIC/ on Federal oil and gas leases.

Coverage includes the performance of all lease obligations, both past and future, including the responsibility to properly plug and abandon any and all wells, including related surface restoration, and to pay any outstanding rentals or royalties due.

This coverage of operations shall continue whether or not the lease subsequently expires, terminates, is canceled, or relinquished; provided, however, that this rider shall not act to increase the actual cumulative or potential liability of the obligor above the face amount of the bond.

Executed this 3rd day of March, 2004.

Witness:

One Riverfront Plaza, 55 Campau NW

Grand Rapids, MI 49503-2616

Address of witness

Wolverine Gas and Oil Corporation

Obligor

For Obligor: Gary R. Bleeker

Vice President and COO

One Riverfront Plaza, 55 Campau NW Grand Rapids, MI 49503-2616
Obligor's address

## WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC

#### **DRILLING PROGNOSIS**

Wolverine Federal #19-1 NE NE SEC 19-T23S-R1W SEVIER CO., UTAH

#### **BRIEF DRILLING PLAN**

Due to surface topography constraints, directionally drill a 7550' MD (6650'TVD) test of the Navajo 1 formation on a day work contract basis from Wolverine's present work area known as Drill Pad B-1 located in Sec 17 T23S – R01W, Sevier Co, UT. Please refer to the directional drilling plan attached for detailed hole angle, trajectory and target information. Deviation is the primary drilling concern in this area. No abnormal pressure or hydrogen sulfide gas is expected, however, an H2S detector will be utilized. The projected surface and bottom hole locations are to be as follows:

Surface Location: 857' fsl & 1919' fwl of Sec 17 T23N – R01W BHL @ top of NVJO1 (6035' TVD) 660' fnl & 660' fel of Sec 19 T23N – R01W

14" conductor casing will be cemented to surface at approximately 80 ft BGL. 9-5/8" surface casing will be set & cemented to surface in a 12-1/4" hole deviated to approximately 10 deg at +/-1506' (+/-1500' TVD). An 8-3/4" hole will then be drilled to +/- 7550' (6650' TVD). 5-1/2" production casing will then be set & cemented to 500' into the surface casing.

#### **EMERGENCY NUMBERS**

Sevier Valley Medical Center	(435)-896-8271
Medical Helicopter	(800)-453-0120
Sheriff Department	(435)-896-2600
Fire Department-Richfield, UT	(435)-896-5479
Bureau of Land Management (Richfield):	(435)-896-1500
Bureau of Land Management (Sali Lake City)	(801) 539-4045
Utah Division of Oil, Gas and Mining (Salt Lake City):	(801)-538-5340

#### **Bureau of Land Management:**

Contact Al McKee with BLM (801) 539-4045 24 hrs prior to 1) spudding, running and cementing all casing strings 2) Pressure testing of BOPE or any casing string 3) Pressure integrity test (mud weight equivalency test) of each casing shoe.

<u>NOTE</u>: Ensure the rig, the cementing and testing procedures <u>ALL</u> comply with BLM and Onshore Oil and Gas Order No.2, requirements.

#### Utah Division of Oil, Gas and Mining

Contact Carol Daniels (801) 538-5284, 24 hrs prior to spudding

#### **GENERAL INFORMATION**

OBJECTIVE: Navajo 1 @ 6035' (TVD)

**ELEVATION:** 5835' GL (est)

PROJECTED TOTAL DEPTH:

7,550 MD; 6650' TVD

**SURFACE LOCATION:** 

857' FSL & 1919' FWL

Section 17-23S-1W

**COUNTY:** 

Sevier

STATE: Utah

**DIRECTIONS TO LOCATION:** 

From town of Sigurd, Utah go south approximately 4.5 miles on Hwy #24 to location on the right side

of road.

#### PROPOSED CASING PROGRAM:

Hole Size	Casing Size	Wt./Ft.	Grade	Joint	Measured Depth Set
	14"				80'
121/4"	9-5/8"	36#	J-55	STC	0'-1,510'
8-3/4"	5½"	17#	L-80	LTC	0'-7,550'

Hole Size	Casing Size	Drift ID, in.	OD of Couplings	Annular Volume in OH, cf/ft	Annular Volume in Csg, cf/ft	Capacity of casing, cf/ft
	14"					
121/4"	9-5/8"	8.379	10.625	0.3127	0.4659	0.4340
8-3/4"	5½"	4.767	6.050	0.2526	0.2691	0.1305

#### **GEOLOGIC INFORMATION:**

Formation	Interval (TVD)	Interval (MD)	Lithology	Prod	Abnormal Psi
Arapien	Surf – 5739'	Surf – 6602'	Shale, siltstone, salt, evaporites		
TwinCreek1	5739'- 6035'	6602' – 6917'	Carbonates		
Navajo 1	6035'- 6450'	6917' – 7350'	Sandstone w/ minor shale	X	
Total Depth	6650'	7550'	Sandstone w/ minor shale		

#### **CONSTRUCTION OF SURFACE LOCATION**

325'x 175' Pad 225'x 125' x 10' Reserve Pit with a 12 mil synthetic liner 72" diameter tin horn cellar, 4' to 5' deep. Flare pit a minimum of 100' from wellhead.

#### **SURFACE HOLE: 0' to 1510'**

Directionally drill a 12-1/4" hole with a TCI rock bit, mud motor & MWD equipment to approximately 1510' using fresh water and gel/lime sweeps when necessary (make hole to fit 9-5/8" casing). Loss circulation is not expected to be a problem in this interval. If losses do occur, begin pumping LCM sweeps. If loss circulation cannot be healed with ±25 ppb LCM, consider dry drilling (no returns). Run survey at every 200' and at TD or as needed to insure bottom hole location.

# PRESSURE CONTROL & SAFETY EQUIPMENT FOR SURFACE HOLE

#### **Bottom to Top**

14" x 13-5/8" 3M weld on flange

13-5/8" 3M x 13-5/8" 3M spacer spool w/ 3" outlets & valves.

13-5/8" 3M Annular preventer, connected to accumulator with enough capacity to close annular and retain 200 psi above pre-charge pressure

13-5/8" Drilling Nipple with fill up and circulating line.

Upper kelly cock valves with handles available

Test Annular to 1500 psi. Test all valves and lines.

## MUD PROGRAM FOR SURFACE HOLE



DEPTH MUD WEIGHT		TYPE VISC		PH	FLUID LOSS
0 -1510'	8.4 – 8.9	FW/Gel/Lime	26-45	7-9	N/C

Note: Sweep hole every 100 – 200 feet or as needed for hole cleaning. Control the pH with Lime & Caustic to aid in gel flocculation for better carrying capacity.

#### **CASING PROGRAM FOR SURFACE HOLE**

DEPTH SIZE	LENGTH	WT	GRADE	THREAD	REMARKS
0 - 1510' 9 <b>5/8</b> "	1510'	36#	J-55	ST&C	

#### Casing Running Sequence:

Texas pattern notched guide shoe, 1 jt of 9 5/8" 36# J-55 ST&C

Float collar

Balance of 9-5/8" 36# J-55 ST&C

10 - centralizers equally spaced.

RU cement co., hold safety meeting, test lines, cement 9-5/8" casing per cement company recommendation. Displace with fresh water or mud if used. *Do not overdisplace cement*.

#### **CEMENTING PROGRAM FOR SURFACE HOLE**

#### Lead:

	360 sx 35:65 Poz: Class C or type 5	Mixed at:	12.8 ppg 1.78 ft <sup>3</sup> /sx
	6% Bentonite	Yield:	$1.78  \text{ft}^3/\text{sx}$
	1% Calcium Chloride	Water:	9.42 gal/sx
	0.25 lb/sx Cello Flake		
Tail:			
	280 sx Class G	Mixed at:	15.6 ppg 1.20 ft³/sx
	2% Calcium Chloride	Yield:	$1.20  \text{ft}^3/\text{sx}$
	.25 lb/sx Cello Flake	Water:	5.25 gal/sx

MUST CIRCULATE CEMENT TO SURFACE per BLM requirements. If the cement does not circulate to surface contact the BLM office at (435) 896-1500. They will require either a temperature survey or a cement bond log to be run, then determine what remedial action will be taken before drilling out.

#### **WOC A TOTAL OF 24 HOURS:**

Wait 4 hours with the hydrostatic pressure of the displacement fluid in place, then cut off conductor and weld on an 11" 3M x 9-5/8" SOW casing head. NU BOPE and choke manifold.

# PRESSURE CONTROL AND SAFETY EQUIPMENT FOR PRODUCTION STRING

#### **Bottom to Top**

11" 3M x 9-5/8" csg head.

11" 3M x 11" 3M spacer spool

11" 3M Double Ram Preventer w/ 4-1/2" Pipe ram on top and blind ram on bottom. Two side outlets, choke side will have two 3" x 3M gate valves. Kill side will have two 2-1/16 x 3M gate valves and one 2" x 3M check valve. Connect BOP to choke manifold with pressure guage.

11" 3M Annular preventer.

11" 3M short rotating head with fill-up line

Upper kelly cock valves with handles available Safety valves and subs to fit all drill string connections in use Inside BOP or float sub available

#### **Testing Procedure**:

#### **Annular Preventer**

The annular preventer will be pressure tested to 1500 psi for a period of ten minutes or until provisions of the test are met, whichever is longer. At a minimum, the pressure test will be performed:

- 1) When the annular is initially installed
- 2) Whenever any seal subject to test pressure is broken
- 3) Following related repairs and at 30 day intervals

The annular preventer will be functionally operated once per week.

#### **Blowout Preventer**

The BOP, choke manifold and related equipment will be pressure tested to 2500 psi, 70% of the internal yield of the casing. Pressure will be maintained for a period of at least ten minutes or until the requirements of the test are met, whichever is longer. At a minimum the pressure test will be performed.

- 1) When the BOP is initially installed
- 2) Whenever any seal subject to test pressure is broken
- 3) Following related repairs and at 30 day intervals



The pipe and blind rams will be activated each trip, but not more than once each day. All BOP drills will be recorded in the IADC driller's log.

#### Accumulator:

The accumulator will have sufficient capacity to open the hydraulically controlled gate valve (if so equipped), close all rams plus the annular preventer, and retain a minimum of 200 psig above pre-charge on the closing manifold without the use of the closing unit pumps. The reservoir capacity will be double the accumulator capacity, and the fluid level will be maintained at the manufacturer's recommendations. The accumulator shall have 2 independent power sources to close the preventers. Nitrogen bottles may be one of the independent power sources and, if so, shall maintain a charge equal to the manufacturer's specifications.

The accumulator pre-charge pressure test will be conducted prior to connecting the closing unit to the BOP stack and at least once every six months thereafter. The accumulator pressure will be corrected if the measured pre-charge pressure is found to be above or below the maximum or minimum limits specified in Onshore Oil & Gas Order Number 2 (only nitrogen gas may be used to pre-charge).

#### Choke Manifold Equipment, Valves and Remote Controls

All choke lines will be straight lines unless turns use tee blocks or are targeted with running tees, and will be anchored to prevent whip and vibration

A valve will be installed in the closing line as close as possible to the annular preventer to act as a locking device. This valve will be maintained in the open position and will be closed only when the power source for the accumulator is inoperative.

Remote controls shall be readily accessible to the driller. Remote controls will be capable of both opening and closing all preventers. Master controls will be at the accumulator and will be capable of opening and closing all preventers and the choke line valve (if so equipped).

The choke manifold and BOP extension rods with hand wheels will be located outside the rig sub structure. The hydraulic BOP closing unit will be located at least twenty-five feet from the well head but readily accessible to the driller. Exact locations and configurations of the hydraulic BOP closing unit will depend upon the particular rig contracted to drill this well.

A flare line will be installed after the choke manifold, extending 125 feet from the center of the drill hole to a separate flare pit.

#### PRODUCTION HOLE: 1,510' TO 7,550'

Trip in the hole with an 8 3/4" insert bit, mud motor & MWD. Drill float, shoe and 20' of new hole. Perform an integrity test to 820 psi (10.5 ppg mud wt equivalent). Drill with a salt saturated mud to the top of the Twin Creek formation.

#### MUD PROGRAM FOR PRODUCTION HOLE

DEPTH	MUD WEIGH	IT TYPE	VISC	pH F	LUID LOSS
1510° – 6500° 6500° - 7550°		Saturated Salt Saturated Salt	34-45 36-45	2,0 20.0	20cc or Less 12cc or Less

Add bulk salt to increase weight to 9.8 ppg. Maintain the pH at 9.0 to 10.0 using lime and caustic. Walk viscosity up to 34 cp. Start bringing fluid loss up to 20 cc. If loss circulation becomes a problem use LCM sweeps to control seepage & clean hole.

#### **EVALUATION PROGRAM FOR PRODUCTION HOLE**

At TD, circulate and condition hole clean for logs. Short trip to the last bit trip depth monitoring well closely for flow. TOH for logs.

Mudlogger: From surface casing to total depth.

#### Electric Logs:

Tool	Surf csg to TD		
Dipole Sonic w/ GR	Yes		
Dual laterolog and microlog w/ GR & Caliper	Yes, GR to surf		
LithoDensity/Neutron w/ GR & Caliper	Yes		
Micro Imaging Dipmeter	Yes		

DST: To be decided Cores: To be decided

#### CASING PROGRAM FOR PRODUCTION HOLE

DEPTH	SIZE	LENGTH	WT	GRADE	THREAD	REMARKS
				T 00	T TO C	
0' – <b>TD</b> '	5 ½	7550'	17.0#	L-80	LT&C	

Rig up casing tools and run 5 ½" production casing as follows:

Float shoe

2 joint of 5 1/2" 17.0# L-80 LT&C casing

Float collar

28 Centralizers, middle shoe joint and one every other joint to 5000'.

Run balance of 5 1/2" 17.0# L-80.

#### **CEMENT PROGRAM FOR PRODUCTION CASING**

#### Lead:

750 sx (50:50) Poz: Premium	Weight:	13.0 ppg
3 % Bentonite	Yield:	$1.76  \text{ft}^3/\text{sx}$
0.4% Halad R-567 (Low Fluid Loss Control)	Water:	8.44 gal/sx
15 % Salt		
5 lbm/sk Gilsonite		
0.3% D-AIR 3000 (Defoamer)		
0.25 lb/sx Flocele		

#### Tail:

350 sx (50:50) Poz: Premium	Weight:	13.4 ppg
2 % Bentonite	Yield:	13.4 ppg 1.49 ft <sup>3</sup> /sx
0.2% Halad R-322 (Low Fluid Loss Control)	Water:	7.09 gal/sx
3 % KCLSalt		

- 3 lbm/sk Silicate Compacted (light Weight Additive)
- 1 lbm/sk Granulite TR 1/4 (Lost Circulation Additive)
- 0.2% WG-17 (Suspension Agent)
- 0.25 lb/sx Flocele

TOC at  $\pm 1,000$  ft

Calculate cement volume based on log caliper +/- 20%. Displace cement w/water. Set slips, ND BOP's, cut off, NU & test wellhead. Clean pits and release rig.

#### **SCHEDULE**

Location preparation is presently scheduled to begin on or about August 15, 2004 Drilling operations are anticipated to begin on or about February 1, 2004 end



#### Wolverine Federal #19-1

The Wolverine Federal #19-1 well site is located approximately 4.2 miles southeast of the town of Sigurd in Township 23 South - Range 1 West, Section 19: Northeast Quarter of the Northeast Quarter (NE/NE) Salt Lake Base and Meridian in Sevier County, Utah.

The proposed Wolverine Federal #19-1 is situated adjacent to Highway 24 in a gentle rolling plains with hilly terrain on the west side. Plant habitat types within the area consist of a combination of Pinyon Pine—Juniper, located on the hillsides, and sagebrush—grass communities in the less gradient areas.

## THE PROPOSED ACTIONS

The proposed depth is 7,550 feet for the Wolverine Federal #19-1 well. The well pad dimensions will be approximately 300 feet by 325 feet. The access road was constructed by initially using fill material and covering it with approximately 8 inches of shale/gravel. Another layer of road base material, approximately 4 inches in depth, will be placed on top of the shale/gravel.

#### WILDLIFE AND VEGETATIVE SPECIES OF CONCERN

Potential effects concerning federally endangered, threatened, proposed, candidate, sensitive, and management indicator wildlife and vegetative species has been evaluated in the proposed area of disturbance before any surface disturbing activities have occurred. It is understood that these activities and the proposed location will be monitored by a BLM staff or approved biologist. A habitat analysis has been completed to evaluate which species may occur in the area. Surface use guidelines will be followed as will surface use restrictions and time limit stipulations in the area of concern for all affected species.

It is understood that the Wolverine Federal #19-1 well site is situated within a designated critical deer wintering range. Proposed activities are not anticipated to occur during any such wintering range seasonal restrictions. There is also the possibility that small clumps of Penstemon plants may be located within this project area. Wolverine Gas and Oil Company of Utah, LLC will take all necessary steps to protect the species of concern and as stipulated by the Bureau of Land Management.

CONFIDE

# Cultural Resource Inventory of A Well Pad and Access Route Near Sigurd, Sevier County, Utah



Jason Bright Mountain States Archaeology 7190 South State Street Midvale, Utah 84047

Project Number U-04-MV-0262b BLM Permit UT0380011



# Cultural Resource Inventory of A Well Pad and Access Route Near Sigurd, Sevier County, Utah

#### **Project Description**

In March 2004, Western Land Services contracted Mountain States Archaeology to perform Class III cultural resource inventory of a small well pad and access route in Sevier County, Utah on behalf of Wolverine Oil and Gas.

The well pad and access route are located in Township 23 South Range 1 West, SW Section 17 (Figure 1). A records search was performed for this project on March 2, 2004 at Utah SHPO. Upon returning the BLM Project Authorization, Craig Harmon at the Richfield BLM office forwarded records search information on March 26<sup>th</sup>, 2004. Fieldwork was completed March 28<sup>th</sup> 2004.

#### Records Search

The SHPO records search found no previously completed inventories or previously recorded sites within one mile of the well pad. The records search information provided by Craig Harmon (Richfield Field Office, BLM) found only U89BL464 which was the Sigurd/Kings Meadow Power Line. No sites were found on this project.

#### Methods

The parcel and access route were staked out prior to fieldwork. A crew of two inventoried the access route with one individual walking its staked centerline from Highway 24 to the well pad with another individual 15 meters south and west of the centerline, and walked back to the road along the centerline with an individual 15 meters to the north and east. Thus, the centerline was walked twice and the remainder of the corridor was walked once. The well pad was inventoried with he same crew of two individuals in parallel transects 15 meters apart. Upon completion, the boundary of the well pad was walked with a GPS unit to produce the map in Figure 1. The crew used a Trimble GeoXM.

#### Environment

The project location is located just west of highway 24, approximately 4 miles south of Sigurd, Utah. Ground visibility was good within the well pad and along the access route. Two steep drainages cut the parcel along its eastern and southern boundaries. Vegetation is composed sagebrush with various bunch grasses and forbs. Sediments are a light brown sand and silt.

#### Results

No cultural resources were located within the well pad or access route. This includes archaeological sites and isolated finds.



# State of Utah

DEPARTMENT OF NATURAL RES—RCES
Division of Water Rights

ROBERT L. MORGAN Executive Director JERRY D. OLDS
State Engineer/Division Director

April 12, 2004

Kings Meadow Ranches C/O Mack Dastrup P.O. Box 570125 Sigurd, UT 84657

RE: TEMPORARY CHANGE APPLICATION t28851

Dear Sir:

The above numbered Temporary Change Application has been approved subject to prior rights and the following condition:

♦ The total amount of water diverted from Kings Meadow Creek will be limited to 14.0 acre-feet of water for uses associated with gas well drilling from May 30, 2004 to May 30, 2005. The historically irrigated land totaling 4.667 acres will not be irrigated.

Copies are herewith returned to you for your records and future reference.

Sincerely

Kirk Forbush, P.E. Regional Engineer

for Jerry Olds, State Engineer

JO/KF/cr enclosure



# APPLICATION FOR TEMPCARY CHANGE OF WATER RIGHTS Pec. by KF Fee Paid S 25.00

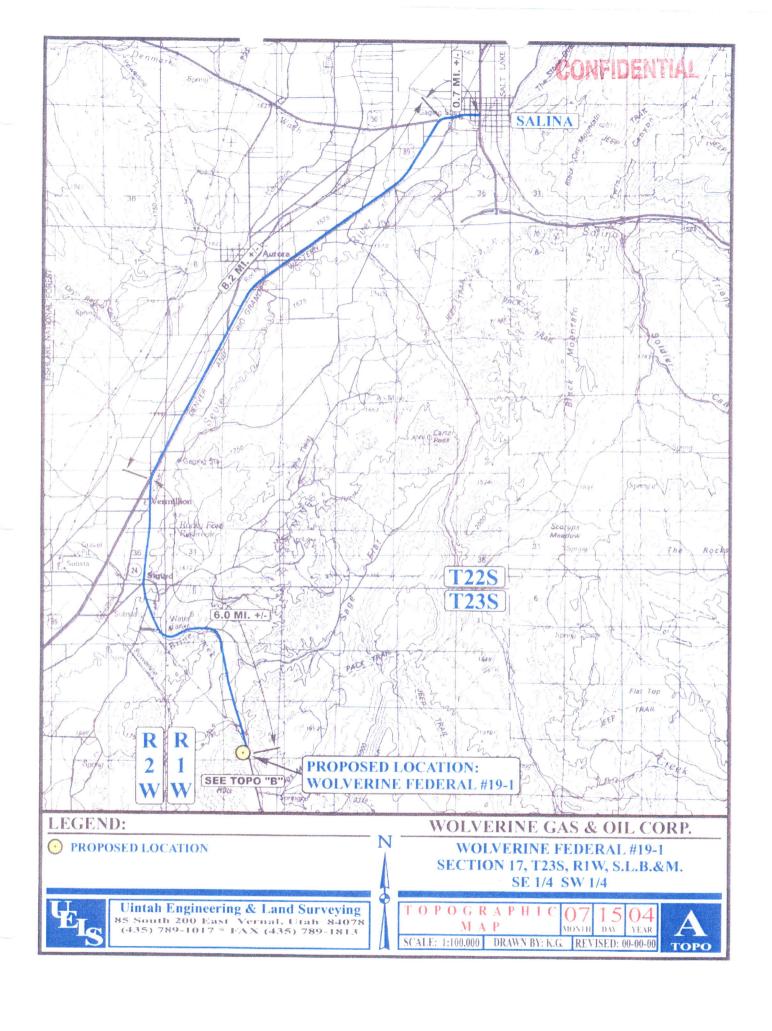
STATE OF UTAH APR 7 2004 Receipt # 04-01540

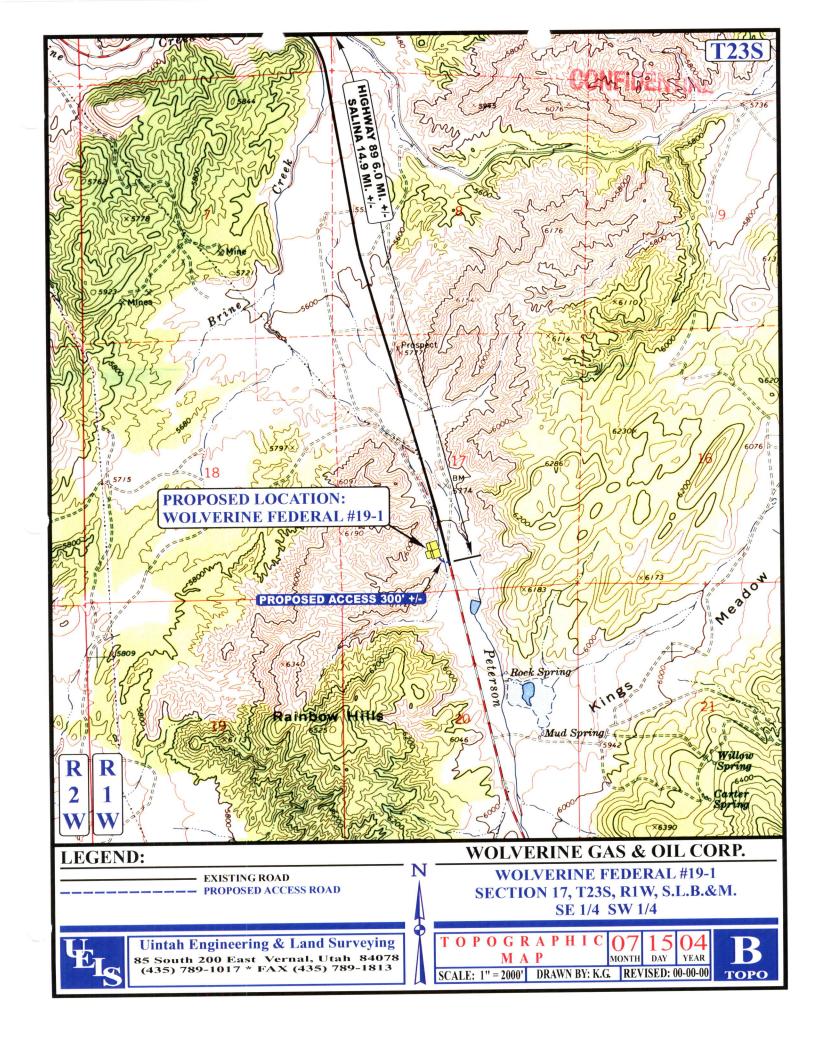
	Cle # 2516 RICHFIELD AREA ROIL#
ł r	For the purpose of obtaining permission to make a temporary change of water in the State of Utah, application is hereby made to the State Engineer, based upon the following showing of facts, submitted in accordance with the requirements of Section 73-3-3 Utah Code Annotated 1953, as amended.
3 1	*WATER RIGHT NO. 63 2529 *APPLICATION NO. t 28851.
	Changes are proposed in (check those applicable)
	x point of diversion. x place of use. x nature of use. x period of use.
1.	
	Name: Kings Meadow Ranches - Evan Dastrup *Interest:%
	Address: P.O. Box 116
	City: Sigurd State: Utah Zip Code: 84657
2.	*PRIORITY OF CHANGE: 4/7/04 *FILING DATE: 4/7/04
3.	RIGHT EVIDENCED BY: A Portion 63-2529
	Prior Approved Temporary Change Applications for this right:
44.	**************************************
	QUANTITY OF WATER: cfs and/or14ac-ft.
5.	SOURCE:Kings Meadow Creek
6.	COUNTY: Sevier
7.	POINT(S) OF DIVERSION: S 1,011', E 1,711' from NW corner of Section 28, T23S, RIW
	Section 28, T235, RIW
	Description of Diverting Works: Kings Meadow Creek
U	POINT(S) OF REDIVERSION
n.	The water has been rediverted from at a point:
	ar a point:
	Description of Diverting Works:
	POINT(S) OF RETURN
	The amount of water consumed is cfs or ac-ft.
	The amount of water returned iscfs orac-ft.
	The water has been returned to the natural stream/source at a point(s):
0.	These items are to be completed by the Division of Water Rights.

10.	ATURE AND PERIOD OF USF
	rigation: From $04 1$ to $10/31$
	rigation: From $04 1                                  $
	omestic: From <u>01/01</u> to <u>12/31</u>
	lunicipal: Fromto
	lining: Fromto
	ower: From to
	ther: Fromto
11	URPOSE AND EXTENT OF USE
	rigation: 4.667 acres. Sole supply of acres.
	ackuptaring (number and kind).
	ockwatering (number and kind):
	omestic: Families and/or Persons.
	unicipal (name):
	ining: Mining District in the Mine.
	Ores mined:
	ower: Plant name:Capacity:Type:Capacity:
	ther (describe):
12.	ACE OF USE  gal description of place of use by 40 acre tract(s): Section 20, T23S, R1W, SE/4, SLBM
13.	ORAGE
10.	eservoir Name:tototototototototototototototototototo
	ipacity: ac-ft. Inundated Area: acres.
	eight of dam: feet.
	egal description of inundated area by 40 tract(s):
***	******** THE FOLLOWING CHANGES ARE PROPOSED ****************
1.4	UANTITY OF WATER:cfs and/orac-ft.
	OURCE: Kings Meadow Creek
	lance of the water will be abandoned:, or will be used as heretofore:
16.	DUNTY: Sevier DINT(S) OF DIVERSION: S 869', W 1,901' from SW corner of Section 17,
17.	T23S, RIW, SLBM
	1235, KIW, SLIDM
	escription of Diverting Works:
	OMMON DESCRIPTION:
	OWNIOU DECOME TIOU
18.	DINT(S) OF REDIVERSION
	ne water will be rediverted from at a point:
	escription of Diverting Works:
	DINT(S) OF RETURN
	e amount of water to be consumed iscfs orac-ft.
	e amount of water to be returned iscfs orac-ft.
	ne water will be returned to the natural stream/source at a point(s):

20	NATURE AND PERIOD OF 3		,		
		J10/_	_	•	
	* *	/10/	<del></del>		
	Domestic: From/	/to/	<del></del>		
	Municipal: From/	to			
	Mining: From/	/to/	<del></del>		
	Power: From/	/to/	<del></del>		
	Other: From <u>05</u> / <u>30</u>	/04 10 05 /30 /	05		
21.	PURPOSE AND EXTENT OF USE	'			
	Irrigation: acr	es. Sole supply of _	асгея.		
	Stockwatering (number and kind):				
	Domestic:Families and/o				
	Municipal (name):				
	Mining:		Mining District at th	e	Mine
	Ores mined:				
	Power: Plant name:		Type:	Capacity:	
	Other (describe): Use water f	or gas well o	drilling		
22	PLACE OF USE				
44.	Legal description of place of use by	40 acre tract(s). Se	ection 17, T2	3S, RlW, SE/	SW, SLBM
	Legal description of place of use by	40 dere tract(s),			
23.	STORAGE				
	Reservoir Name:		Storage Period: f	rom	. 10
	Capacity: ac-ft. In	undated Area:	acres.		
	Height of dam:fget.				
	Legal description of inundated area	by 40 tract(s):			
24.	EXPLANATORY				
	The following is set forth to define water rights used for the same purp	more clearly the fu lose. (Use additions	ll purpose of this app Il pages of same size	plication. Include if necessary):	any supplementa
	Mack Dastrup (435) 896	<b>-</b> 5206	Kenneth Da	<u>strup (435)</u>	<u>896-8759</u>
	P.O. Box 570125		P.O. Box 5	70056	
	Sigurd, Utah 84657		Sigurd, Ut	ah 84657	
	######################################	\$ # # # # # # # # # # # # # # # # # # #	***********	****	***
	The undersigned hereby acknowled of the above-numbered application responsibility for the accuracy of	through the courts	ocu of the employees	s of the Edivision o	r vvater vigues, a

n II ıe Signature of Applicant(s) applicant(s).







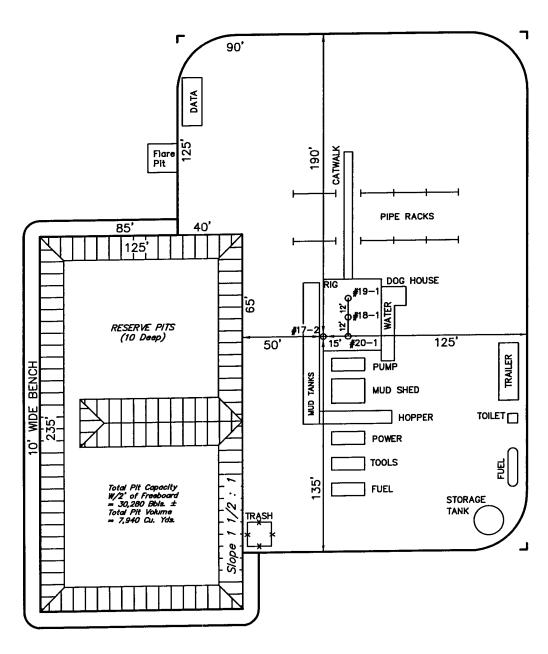
SCALE: 1" = 60' DATE: 6-17-04 Drawn By. C.G. DATE: 7-7-04

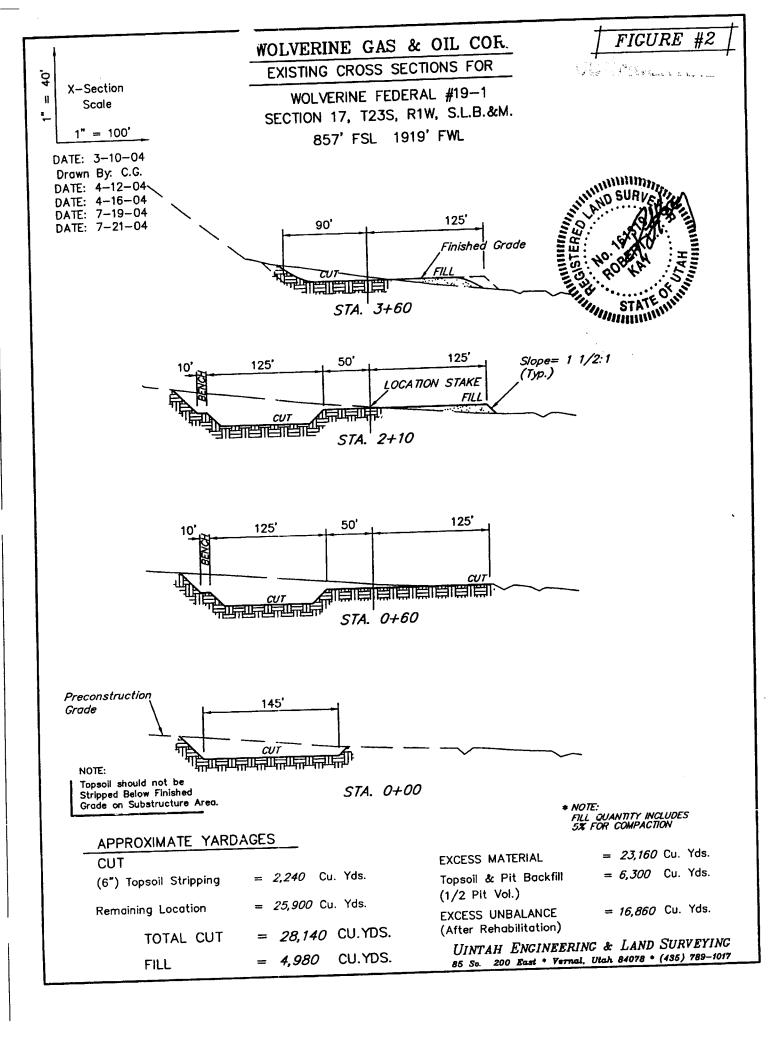
## WOLVERINE GAS & OIL CORP.

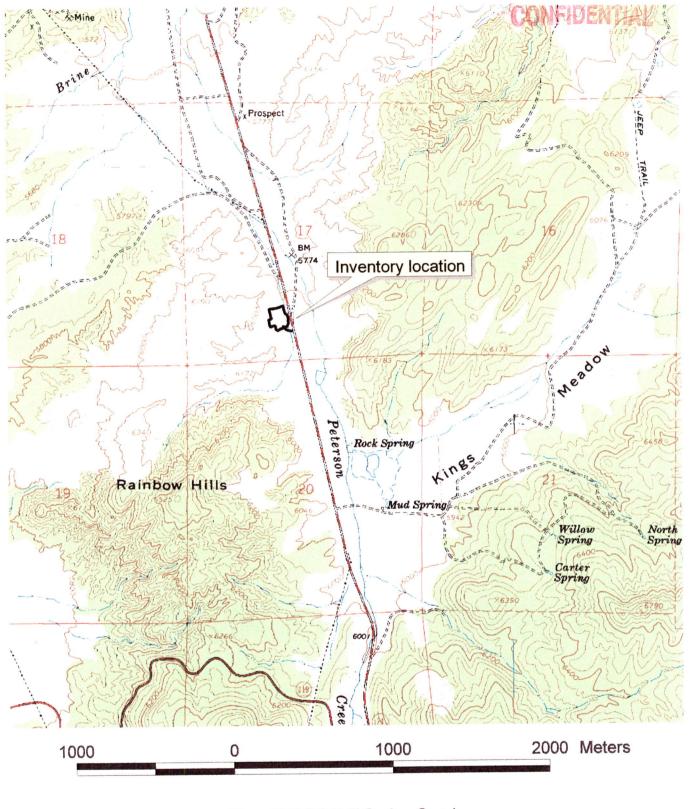
#### TYPICAL RIG LAYOUT FOR

WOLVERINE FEDERAL #19-1 SECTION 17, T23S, R1W, S.L.B.&M. 857' FSL 1919' FWL









Sigurd USGS 7.5' Series Quad.

T. 23S R. 1W. Southwest Section 17





<b>W</b>	Pather I	ord .	1	W	olver	ine (	Gas d	& Oil	Co	of U	J <b>tah.</b>	LI	LC _		
-	Azin Mae	nuths to Tru netic North	e North								<b>,</b>		Γ23S R01W	Pad B-1 Sevier Cour SE/4 Sec 1	ity, Utah
	<sup>™</sup>	Magnet Strength: 5 Dip Angle	ic Field 2128nT : 64.57°										19-1 :	SEC Locatio	n
		Dip Angle Date: 7 Model: i	/7/2004 grf2000					SECTION	DETAILS			1919	FWL & 85 Sevie	7' FSL Sec r County, U	17 23S 01W F
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					Vertical Section	# 239.54° [100	0f/m}					hecked		Date	

# W therford Directional Serv'es

#### **Exploration Report**

Page:

Company: Wolverine Gas & Oil Co of Utah

Field: Sevier County, Utah

Site: Pad B-1

Well: 19-1 Wellpath: 1

Date: 7/12/2004

Time: 12:03:37 Co-ordinate(NE) Reference:

Vertical (TVD) Reference: Section (VS) Reference:

**Survey Calculation Method:** 

Well: 19-1, True North SITE 0.0

Well (0.00N,0.00E,239.54Azi) Minimum Curvature

Db: Sybase

Pad B-1 Site:

Section 17 23S 1W Sevier County Utah 830' FSL & 1901' FWL

Site Position: From: Geographic

Position Uncertainty: 0.0 ft **Ground Level:** 0.0 ft

169376.77 ft Northing: Easting:

1876068.36 ft

Latitude: Longitude: North Reference: Grid Convergence:

38 47 51.068 N 111 56

5.240 W True

-0.28 deg

Survey Program for Definitive Wellpath

Date: 7/7/2004 Actual From To ft ft

Validated: No Survey

Version: 0

Tookode

**Tool Name** 

tn	MD	Incl	Azim	TVD	N/S	E/W	VS	DLS	Tool	Radius
	ft	deg	deg	ft	ft	ft	ft	deg/100ft	1001	ft
	0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00		
	100.0	0.00	239.54	100.0	0.0	0.0	0.0	0.00	MWD	
	200.0	0.00	239.54	200.0	0.0	0.0	0.0	0.00	MWD	
	300.0	0.00	239.54	300.0	0.0	0.0	0.0	0.00	MWD	
	400.0	0.83	239.54	400.0	-0.4	-0.6	0.7	0.83	MWD	
	500.0	1.66	239.54	500.0	-1.5	-2.5	2.9	0.83	MWD	
	600.0	2.49	239.54	599.9	-3.3	-5.6	6.5	0.83	MWD	
	700.0	3.32	239.54	699.8	-5.9	-10.0	11.6	0.83	MWD	
	800.0	4.15	239.54	799.6	-9.2	-15.6	18.1	0.83	MWD	
	900.0	4.97	239.54	899.2	-13.2	-22.4	26.0	0.83	MWD	
	4000.0	c 00								
	1000.0 1100.0	5.80 6.63	239.54 239.54	998.8 1098.2	-18.0	-30.5	35.4 46.3	0.83	MWD	
	1200.0	7.46	239.54 239.54	1197.5	-23.4	-39.9	46.3	0.83	MWD	
	1300.0	8.29	239.54	1296.5	-29.7 -36.6	-50.4	58.5 73.3	0.83	MWD	
	1400.0	9.12	239.54 239.54	1395.4	-36.6 -44.3	-62.3 -75.3	72.2 87.4	0.83 0.83	MVVD MVVD	
	4500.4	40.00								
	1506.1	10.00	239.54	1500.0	-53.2	<del>-9</del> 0.5	105.0	0.83	9 5/8"	
	1600.0	12.82	239.54	1592.0	-62.6	-106.5	123.6	3.00	MWD	
	1700.0	15.82	239.54	1688.9	-75.2	-127.8	148.3	3.00	MWD	
	1800.0	18.82	239.54	1784.4	-90.3	-153.5	178.0	3.00	MWD	
	1900.0	21.82	239.54	1878.1	-107.9	-183.4	212.8	3.00	MWD	
	2000.0	24.82	239.54	1970.0	-127.9	-217.5	252.3	3.00	MWD	
	2100.0	27.82	239.54	2059.6	-150.4	-255.7	296.7	3.00	MWD	
	2200.0	30.82	239.54	2146.8	-175.2	-297.9	345.6	3.00	MWD	
	2300.0	33.82	239.54	2231.3	-202.3	-344.0	399.1	3.00	MWD	
	2367.9	35.85	239.54	2287.0	-222.0	-377.4	437.9	3.00	MWD	
	2400.0	35.85	239.54	2313.0	224 5	202.0	450.7			
	2500.0	35.85	239.54 239.54		-231.5 261.2	-393.6	456.7	0.00	MWD	
	2600.0	35.85	239.54 239.54	2394.1 2475.1	-261.2	-444.1	515.2	0.00	MWD	
	2700.0	35.85	239.54 239.54	2475.1 2556.2	-290.9 -320.6	-494.6 545.1	573.8	0.00	MWD	
	2800.0	35.85	239.54 239.54	2556.2 2637.2	-320.6 -350.3	-545.1 -595.6	632.4	0.00	MWD	
		55.65	200.04	2001.2	-330.3	-333.0	691.0	0.00	MWD	
	2900.0	35.85	239.54	2718.3	-380.0	-646.1	749.5	0.00	MWD	
	3000.0	35.85	239.54	2799.3	-409.7	-696.5	808.1	0.00	MWD	
	3100.0	35.85	239.54	2880.4	-439.4	-747.0	866.7	0.00	MWD	
	3200.0	35.85	239 54	2961.4	-469.1	-797.5	925.2	0.00	MWD	
	3300.0	35.85	239.54	3042.5	-498.8	-848.0	983.8	0.00	MWD	
	3400.0	35.85	239.54	3123.5	-528.5	-898.5	1042.4	0.00	MWD	
	3500.0	35.85	239.54	3204.6	-558.2	-949.0	1101.0		MWD	
	3600.0	35.85	239.54	3285.6	-587.9	-999.5	1159.5		MWD	
	3700.0	35.85	239.54	3366.7	-617.6	-999.5 -1049.9	1218.1		MWD	
	3800.0	35.85	239.54	3447.7	-647.3	-1100.4	1276.7		MWD	
	3900.0	35.85	239.54	3528.8	-677.0	-1150.9	1335.3		MWD	

# Watherford Directional Services **Exploration Report**

Children ...

Page:

Company: Wolverine Gas & Oil Co of Utah

Field: Site: Well:

Sevier County, Utah Pad B-1

19-1 Wellpath:

Date: 7/12/2004

Time: 12:03:37 Co-ordinate(NE) Reference: Vertical (TVD) Reference:

Section (VS) Reference: Survey Calculation Method: Well: 19-1, True North SITE 0.0

Minimum Curvature

Well (0.00N,0.00E,239.54Azi) Db: Sybase

2

Survey

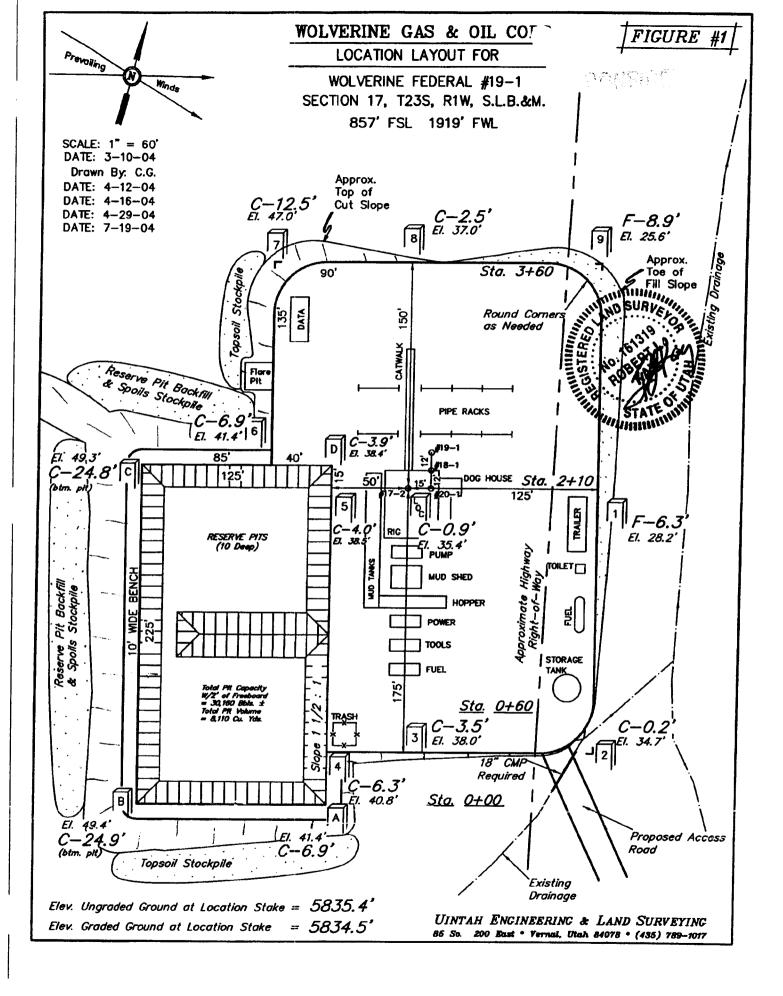
Stn	MD	Incl	Azim	TVD	N/S	E/W	vs	DLS	Tool	Radius
	ft	deg	deg	ft	ft	ft	ft	deg/100ft		ft
	4000.0	35.85	239.54	3609.8	-706.7	-1201.4	1393.8	0.00	MWD	
	4100.0	35.85	239.54	3690.9	-736.4	-1251.9	1452.4	0.00	MWD	
	4200.0	35.85	239.54	3771.9	-766.1	-1302.4	1511.0	0.00	MWD	
	4300.0	35.85	239.54	3853.0	-795.8	-1352.9	1569.6	0.00	MWD	
	4400.0	05.05	200 = 1							
	4400.0	35.85	239.54	3934.0	-825.5	-1403.4	1628.1	0.00	MWD	
	4500.0	35.85	239.54	4015.1	-855.2	-1453.8	1686.7	0.00	MWD	
	4600.0	35.85	239.54	4096.1	-884.9	-1504.3	1745.3	0.00	MWD	
	4700.0	35.85	239.54	4177.2	-914.6	-1554.8	1803.8	0.00	MWD	
	4800.0	35.85	239.54	4258.2	-944.3	-1605.3	1862.4	0.00	MWD	
	4900.0	35.85	239.54	4339.3	-974.0	-1655.8	1921.0	0.00	MWD	
	5000.0	35.85	239.54	4420.3	-1003.6	-1706.3	1979.6	0.00	MWD	
	5100.0	35.85	239.54	4501.4	-1033.3	-1756.8	2038.1	0.00	MWD	
	5200.0	35.85	239.54	4582.4	-1063.0	-1807.2	2036.1	0.00		
	5300.0	35.85	239.54	4663.5	-1003.0				MWD	
	5550.5	33.03	233.34	4003.3	-1092.7	-1857.7	2155.3	0.00	MWD	
	5400.0	35.85	239.54	4744.5	-1122.4	-1908.2	2213.9	0.00	MWD	
	5500.0	35.85	239.54	4825.6	-1152.1	-1958.7	2272.4	0.00	MWD	
	5600.0	35.85	239.54	4906.6	-1181.8	-2009.2	2331.0	0.00	MWD	
	5700.0	35.85	239.54	4987.7	-1211.5	-2059.7	2389.6	0.00	MWD	
	5800.0	35.85	239.54	5068.7	-1241.2	-2110.2	2448.1	0.00	MWD	
	5900.0	35.85	220.54	E4.40.0	4070.0	0400 7				
	6000.0		239.54	5149.8	-1270.9	-2160.7	2506.7	0.00	MWD	
		35.85	239.54	5230.8	-1300.6	-2211.1	2565.3	0.00	MWD	
	6100.0	35.85	239.54	5311.9	-1330.3	-2261.6	<b>2</b> 623.9	0.00	MWD	
	6200.0	35.85	239.54	5392.9	-1360.0	-2312.1	2682.4	0.00	MWD	
	6221.9	35.85	239.54	5410.6	-1366.5	-2323.1	2695.2	0.00	MWD	
	6300.0	33.51	239.54	5474.9	-1389.0	-2361.5	2739.7	3.00	MWD	
	6400.0	30.51	239.54	5559.7	-1415.9	-2407.2	2792.7	3.00	MWD	
	6500.0	27.51	239.54	5647.1	-1440.5	-2449.0	2841.2	3.00	MWD	
	6600.0	24.51	239.54	5737.0	-1462.7	-2486.7	2885.0	3.00	MWD	
•	6602.2	24.44	239.54	5739.0	-1463.2	-2487.5	2886.0	3.00	Twin Cre	
	6700.0	24 54	220.54	E000 C	4 400 6	0500 /				
	6800.0	21.51	239.54	5829.0	-1482.6	-2520.4	2924.1	3.00	MWD	
	6900.0	18.51	239.54	5923.0	-1499.9	-2549.9	2958.3	3.00	MWD	
	6917.0	15.51	239.54	6018.6	-1514.7	-2575.1	2987.6	3.00	MWD	
		15.00	239.54	6035.0	-1517.0	-2579.0	2992.1	3.00	NVJ01 66	
	7000.0	15.00	239.54	6115.2	-1527.9	-2597.5	3013.6	0.00	MWD	
	7100.0	15.00	239.54	6211.8	-1541.0	-2619.8	3039.4	0.00	MWD	
	7200.0	15.00	239.54	6308.3	-1554.1	-2642.1	3065.3	0.00	MWD	
	7300.0	15.00	239.54	6404.9	-1567.3	-2664.4	3091.2	0.00	MWD	
	7400.0	15.00	239.54	6501.5	-1580.4	-2686.7	3117.1		MWD	
	7500.0	15.00	239.54	6598.1	-1593.5	-2709.1	3143.0		MWD	
	7550 7									
	7553.7	15.00	239.54	<b>665</b> 0.0	-1600.5	-2721.0	3156.9	0.00	5 1/2"	

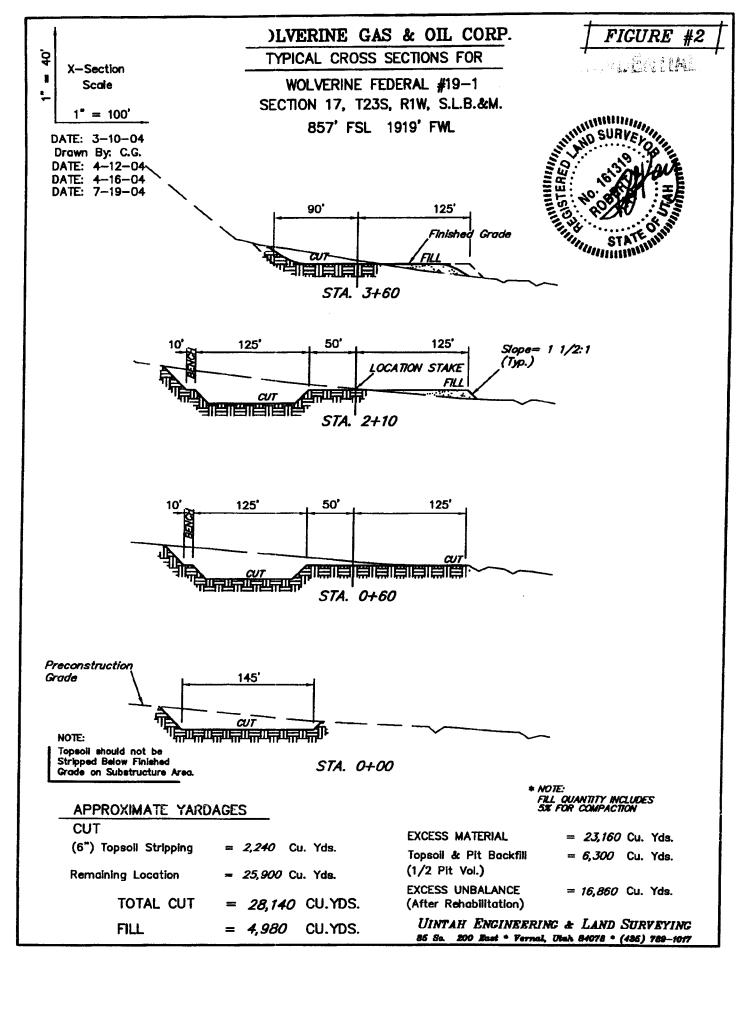
**Casing Points** 

MD	TVD	Diameter	Hole Size	Name
ft	ft	in	in	
1506.1	1500.0	9.625	12.250	9 5/8"
7553.7	6350.0	5.500	8.750	5 1/2"

Formations

MD ft	TVD ft	Form ations	Lithology	Dip Angle deg	Dip Direction deg
6602.2	5739.0	Twin Creek		0.00	0.00







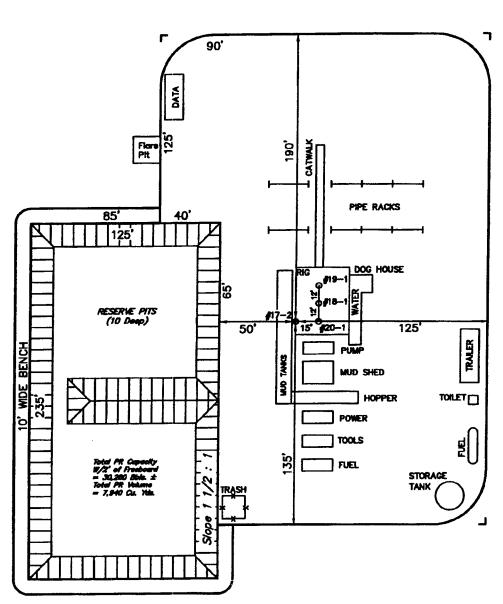
SCALE: 1" = 60' DATE: 6-17-04 Drawn By: C.G. DATE: 7-7-04

# WOLVERINE GAS & OIL COPP.

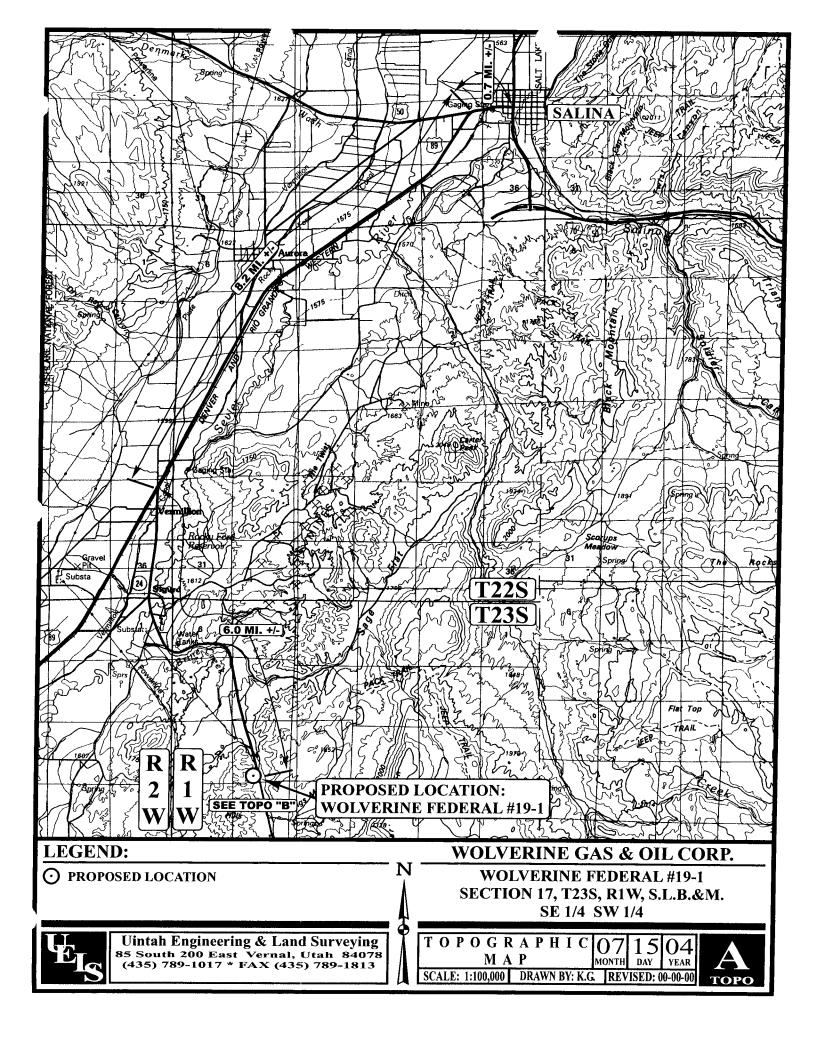
TYPICAL RIG LAYOUT FOR

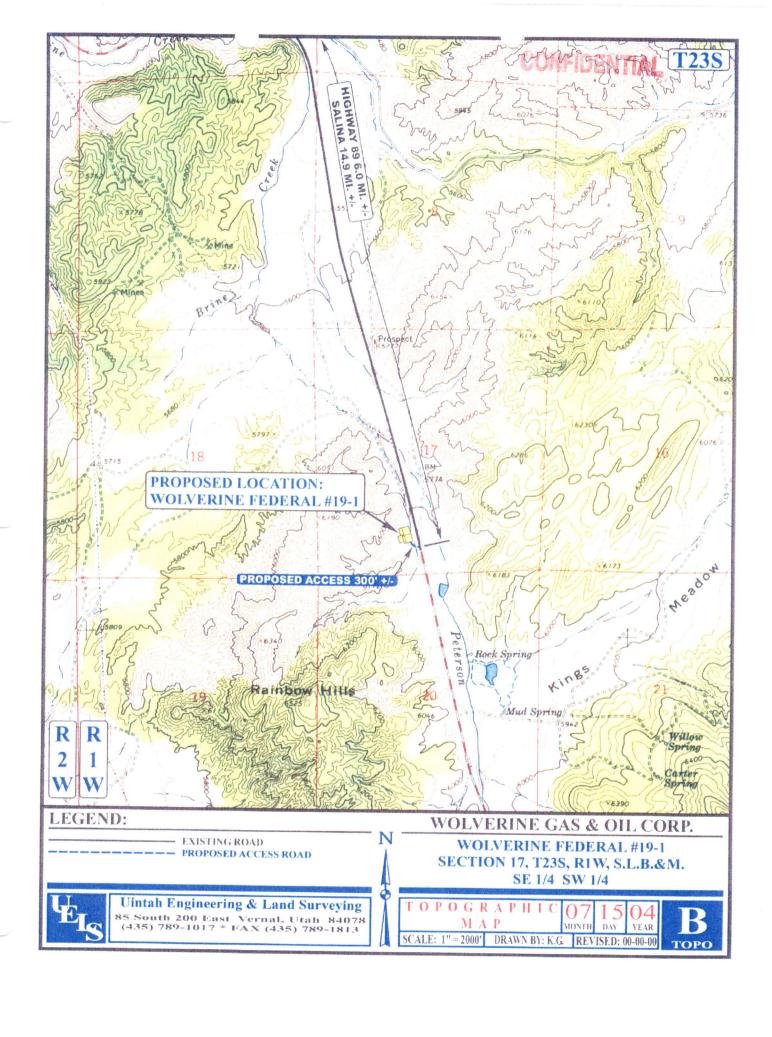
WOLVERINE FEDERAL #19-1 SECTION 17, T23S, R1W, S.L.B.&M. 857' FSL 1919' FWL





UINTAH ENGINEERING & LAND SURVEYING 85 So. 200 East \* Vernal, Utah 84078 \* (436) 789-1017

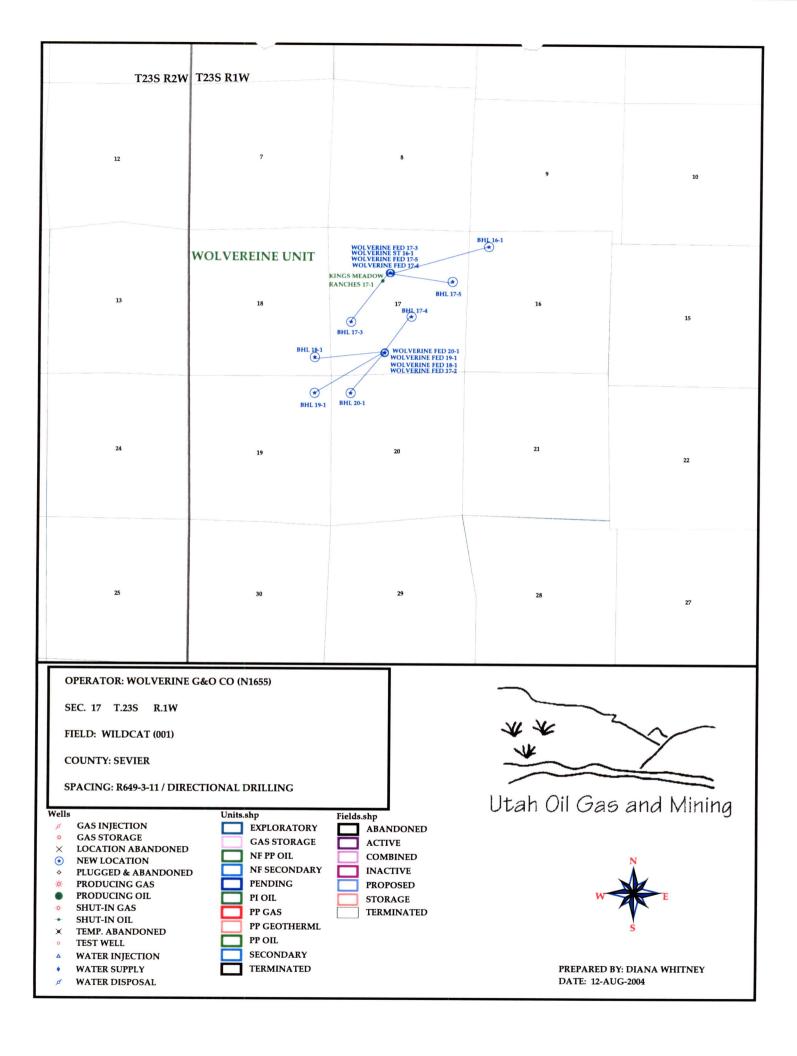




### WORKSHEET

### APPLICATION FOR PERMIT TO DRILL

APD RECEIVED: 08/05/2004	API NO. ASSIGNED: 43-041-30033			
WELL NAME: WOLVERINE FED 19-1  OPERATOR: WOLVERINE GAS & OIL CO ( N1655 )  CONTACT: RICHARD MORITZ  PROPOSED LOCATION:  SESW 17 230S 010W  SURFACE: 0857 FSL 1919 FWL  BOTTOM: 0660 FNL 0660 FEL Scc 19  SEVIER WILDCAT ( 1 )  LEASE TYPE: 1 - Federal	PHONE NUMBER: 616  INSPECT LOCATN  Tech Review  Engineering  Geology  Surface		Date	
LEASE NUMBER: UTU-73528  SURFACE OWNER: 1 - Federal  PROPOSED FORMATION: NAVA  COALBED METHANE WELL? NO	LATITUDE: 38.79			
RECEIVED AND/OR REVIEWED:  ✓ Plat ✓ Bond: Fed[1] Ind[] Sta[] Fee[] (No. WY 3329 )  № Potash (Y/N)  № Oil Shale 190-5 (B) or 190-3 or 190-13 ✓ Water Permit (No. 63-2529 )  № RDCC Review (Y/N) (Date: )  № Fee Surf Agreement (Y/N)	R649-3-3. Ex Drilling Unit Board Cause Eff Date: Siting:	eneral om Qtr/Qtr & 920' cception		
STIPULATIONS: 1- fedina O app	run			





August 18, 2004

Utah Division of Oil, Gas & Mining 1594 W. N. Temple Suite 1210 Salt Lake City, Utah 84114-5801

RE: Wolverine Gas & Oil Company of Utah, LLC requests permission to drill the Wolverine Federal #19-1

### Gentlemen:

Pursuant to Rule R649-3-11 of the State's Oil & Gas Conservation regulations, Wolverine Gas & Oil Company of Utah, LLC, hereby makes application for approval to directionally drill an oil & gas well.

Wolverine Gas & Oil Company of Utah, LLC (Wolverine) proposes to drill the Wolverine Federal #19-1 well to a total depth of 7,550 feet and is an exception to Rule R649-3-3. Wolverine is the only leasehold operator within a 460 foot radius of the bore hole.

The mountainous terrain of the area is such that directional drilling is the most effective method to minimize surface disturbance. By locating the well pad on a relatively flat surface and drilling a directional well beneath this challenging topography, Wolverine can most effectively minimize surface disturbance and ensure proper utilization of resources.

Attached hereto is a plat as required by the Commissions rules and regulations.

If no objections are filed, the applicant requests that this application be approved. If objections are filed, applicant requests the matter be set for hearing and that it be advised of the hearing date.

Respectfully submitted,

Wolverine Gas & Oil Company of Vtah, LLC

Authorized Agent

RECEIVED
AUG 19 2004

DIV. OF OIL, GAS & MINING



# United States Department of the Interior

BUREAU OF LAND MANAGEMENT RICHFIELD FIELD OFFICE 150 East 900 North Richfield, Utah 84701



In Reply Refer To:

3160 (UT-050)

August 10, 2004

Mr. Richard D. Moritz Wolverine Gas and Oil Company of Utah, LLC One Riverfront Plaza 55 Campau NW Grand Rapids, Michigan 49503

Dear Mr. Moritz:

On July 22, 2004, four Applications for Permit to Drill and on July 28, 2004, three additional Applications for Permit to Drill were filed in this office. These seven wells are Wolveine #17-3, 17-4, 17-5, 16-1, 18-1, 19-1, and 20-1 and are on Federal lease UTU-73528. The well pad locations for these wells are in Section 17, T. 23 S., R. 1 W., SLM, Sevier County, Utah. Your applications have been reviewed for completeness in accordance with the provisions of the Federal regulations and the Onshore Oil and Gas Orders.

Based on Onshore Order 1, with the reference to the appropriate section, the following items are missing or need clarification in your applications:

Section III.G. 3, Form 3160-3 or as an attachment:

- c. Type of drilling tools (rotary or cable).
- d. Casing condition (new or used).

### Section III.G. 4. a., Drilling Plan:

- (2) The anticipated contents of each geologic structure or stratum (water, oil, gas or other minerals).
- (3) Pressure control schematic.
- (4) As these are exploratory wells, the design factors for each casing string. (See Onshore Order #2, *Drilling Operations*, III. B. Casing and Cementing Requirements.)

### Section III.G. 4. b., Surface Use Program:

(3) Location of existing wells. For 17-3, 17-4, 17-5, and 16-1, the Location Map does not show the existing Well 17-2. For 18-1, 19-1, and 20-1, the Location Map does not show the existing well 17-1. Are any water wells within the one-mile parameter of the Order? At the proposed well site for 17-3, 17-4, 17-5, and 16-1, three well pads are shown. Two of the pads are assumed to be

the existing well pad (17-1) and the proposed pad (17-3 and others); however, the third pad is not identified.

- (4) Location of proposed production facilities.
- (5) Location of water supply. Be specific as to the source, if it is non-Federal.
- (9) Well site layout. Living facilities and the orientation of the rig and other facilities are not included on a layout.
- (11) Surface Ownership. The surface ownership of the well and access road shall be indicated. Where the surface of the well is privately owned, the operator shall include the name, address, and phone number, if known, of the surface owner. If privately owned, the existence of an agreement between the operator and owner needs to be provided.

All the above items will be necessary before approval can be granted. All other portions of your application are in place, and we will continue to process your application up to the point the missing information prevents further action.

If future applications are filed, we request that Wolverine Gas and Oil adhere closely to Onshore Order No. 1, Section III. G. Components of a Complete Application for Permit to Drill. In the order, the Drilling Plan and the Surface Plan items are enumerated for ease of reference during both the preparation and the review of a proposal. All these items are required by regulation, and following the outline in the Order will facilitate the review of your applications. Although some items appear unnecessary or outdated, please provide the information. Unless specifically requested, additional information is unnecessary and may lengthen the review time frames.

In addition, the Application for Permit to Drill package does not need to be filed in a binder for the BLM. BLM records are kept in a file folder, so we remove the binder for ease of filing for our record keeping.

If you have any questions, please contact Michael Jackson at (435) 896-1522. Technical questions on the Drilling Plan may be directed to Al McKee at (801) 539-4045.

Sincerely,

Dany S. Half Gary L. Hall

Assistant Field Manager

004

# **United States Department of the Interior**

# BUREAU OF LAND MANAGEMENT Utah State Office

P.O. Box 45155 Salt Lake City, Utah 84145-0155

IN REPLY REFER TO: 3160 (UT-922)

August 16, 2004

### Memorandum

To:

Field Office Manger, Richfield Field Office

From:

Michael Coulthard, Petroleum Engineer

Subject:

2004 Plan of Development Wolverine Unit Sevier County,

Utah.

Pursuant to email between Diana Whitney, Division of Oil, Gas and Mining, and Mickey Coulthard, Utah State Office, Bureau of Land Management, the following wells are planned for calendar year 2004 within the Wolverine Unit, Sevier County, Utah.

API#

WELL NAME

LOCATION

(Proposed PZ Navajo)

43-041-30032 Wolverine Federal 20-1 Sec 17 T23S R01W 0833 FSL 1925 FWL BHL Sec 20 T23S R01W 0660 FNL 0660 FWL

43-041-30033 Wolverine Federal 19-1 Sec 17 T23S R01W 0857 FSL 1919 FWL BHL Sec 19 T23S R01W 0660 FNL 0660 FEL

43-041-30034 Wolverine Federal 18-1 Sec 17 T23S R01W 0845 FSL 1922 FWL BHL Sec 18 T23S R01W 0660 FSL 0660 FEL

43-041-30035 Wolverine Federal 17-4 Sec 17 T23S R01W 1736 FNL 2298 FWL BHL Sec 17 T23S R01W 1980 FSL 1980 FEL

43-041-30036 Wolverine Federal 17-3 Sec 17 T23S R01W 1736 FNL 2283 FWL BHL Sec 17 T23S R01W 1980 FSL 0660 FWL

43-041-30037 Wolverine State 16-1 Sec 17 T23S R01W 1736 FNL 2253 FWL BHL Sec 16 T23S R01W 0660 FNL 0660 FWL

43-041-30038 Wolverine Federal 17-5 Sec 17 T23S R01W 1736 FNL 2268 FWL BHL Sec 17 T23S R01W 1980 FNL 0660 FEL



# WOLVERINE GAS AND OIL CORPORATION

Energy Exploration in Partnership with the Environment

July 26, 2004

United States Department of the Interior Bureau of Land Management Richfield Field Office 150 East 900 North Richfield, Utah 84701

### RE: Designated Agent Contact Information: Wolverine Federal #19-1

To Whom It May Concern:

Wolverine Gas and Oil of Utah, LLC (Wolverine) is designating Western Land Services, Inc. as Agent for the above captioned well. Questions, deficiencies and clarifications regarding this APD package should be directed to the following contacts with Western Land Services, Inc.:

Shawn Burd

(310 South 100 East, Richfield, UT 84701)

Richfield Office: 435-896-1943 Cellular Phone: 435-979-4689 E-mail: shawn.burd@westernls.com

OR:

Don Anderson

(54 West Seymour, Sheridan, WY 82801)

Office: 307-673-1817

E-mail: don.anderson@westernls.com

Approvals or other notifications should be directed to me at Wolverine and to the Agent named above. My contact information is contained within the letterhead address below (extension 119) and my e-mail address is: rmoritz@wolvgas.com

Sincerely,

Wolyerine Gas and Oil Company of Utah, LLC

Richard D. Moritz

Vice-President, Land & Legal



August 5, 2004

Utah Division of Oil, Gas & Mining 1594 W. N. Temple Suite 1210 Salt Lake City, Utah 84114-5801

RE: Wolverine Gas & Oil Company of Utah, LLC requests permission to drill the Wolverine Federal #19-1 well as an exception to Rule R649-3-3

#### Gentlemen:

Pursuant to Rule R649-3-3 of the State's Oil & Gas Conservation regulations, Wolverine Gas & Oil Company of Utah, LLC, hereby makes application for approval to directionally drill an oil & gas well.

Wolverine Gas & Oil Company of Utah, LLC (Wolverine) proposes to drill the Wolverine Federal #19-1 well to a total depth of 7,550 feet. Wolverine is the only operator within a 460 foot radius.

The mountainous terrain of the area is such that directional drilling is the most effective method to minimize surface disturbance. By locating the well pad on a relatively flat surface and drilling a directional well beneath this challenging topography, Wolverine can most effectively minimize surface disturbance and ensure proper utilization of resources.

Attached hereto is a plat as required by the Commissions rules and regulations.

If no objections are filed, the applicant requests that this application be approved. If objections are filed, applicant requests the matter be set for hearing and that it be advised of the hearing date.

Respectfully submitted.

Wolverine Gas & Oil Company of Utah, LLC

Authorized Agent

Web: www.westernls.com

# PROJECT PLAN OF DEVELOPMENT AND MASTER SURFACE USE PLAN

# *Wolverine FEDERAL #19-1*

NAME OF APPLICANT: Wolverine Gas and Oil Company of Utah,

LLC

One Riverfront Plaza, 55 Campau NW Grand Rapids, Michigan 49503-2616

PROJECT NAME: "Wolverine Federal #19-1"

NE/NE of Section 19

Township 23 South – Range 1 West

ATTACHMENTS: A.) Project Map/Survey

B.) Well Site Location LayoutC.) Cross Sections (Cut and Fill)

D.) Wildlife & Vegetative Species of

Concern Summary

E.) Cultural Resource Survey Report

### I. DESCRIPTION OF PROJECT:

Wolverine Gas and Oil Company of Utah, LLC (Wolverine) proposes to drill and explore for hydrocarbons, using a directional drilling program, from the Navajo Formation at depths of approximately 4,810' – 7,036' and approximately 8,062' – 9,100' within the Wolverine Federal Exploration Unit situated in Sevier County, Utah:

### TOWNSHIP 23 SOUTH, RANGE 1 WEST

Northeast Quarter of Northeast Quarter (NE/NE) of Section 19

Project Plan of Develc ent & Surface Use Plan Wolverine Gas & Oil Company of Utah, LLC Wolverine Federal #19-1

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Vell Name & No.	Target	Elev.	Location	TD	Footages
LEASE#UIU-73528					
Wolverine Federal #19-1	Navajo 1 and 2	5,835'	NENE Sec 19, T23S-RIW	7,550°	860' FSL; 1,916' FWL

The attached Project Map (Attachment A) indicates the proposed well site and its intended configuration. Additionally, the existing access route is indicated. This well is being drilled within the "Wolverine Federal Exploration Unit" and upon federally owned surface administered by the Bureau of Land Management, United States Department of the Interior.

Mineral rights within the Wolverine Federal Exploration Unit are owned by a variety of interests and are federally owned at the target bottom-hole location for this proposed well. The proposed surface plan will be reviewed and inspected by the appropriate regulatory agencies, state and federal, to ensure proper utilization of the surface reflecting an effort by Wolverine to minimize surface disturbance and waste. Appropriate Onshore Oil and Gas Orders and those of the Utah Division of Oil, Gas and Mining will be followed in the constructing, drilling, completion, operation, plugging and surface reclamation of this well.

The project is situated within an area that is referred to by the Utah Division of Oil, Gas and Mining (Statement of Basis, Kings Meadow Ranches 17-1, October 21, 2003) as "... placed in the High Plateaus section of the Colorado Plateau physiographic province in western central Utah. Some people have characterized this area as being in the Basin and Range – Colorado Plateau transition zone." The drill site itself is located in a flat area between steep hills and is contiguous to Highway 24 from which access to this site will be established. The flat area is dominated by sagebrush – grass communities and the nearby hillsides are dominated by Pinyon Pine – Juniper communities. The access route consists of an improved driveway off from Highway 24 entering onto the existing well site. BLM road construction standards will be adhered to as new improvements are constructed.

Wolverine's proposed "Wolverine Federal #19-1" project is most easily accessible from Sigurd, Utah. From Sigurd, one would drive down Highway 24 heading east/southeasterly. At mile marker 14, drive approximately 0.2 miles and turn westerly onto the access road heading onto the well site. Drive approximately 100 yards to the proposed well pad location.

Surface water is located in the area primarily in the form of the Sevier River, in the Peterson Creek drainage, a tributary of Brine Creek. Local springs arising from the volcanic rocks and ephemeral drainages also exist in the area including a drainage way Project Plan of Develo ent & Surface Use Plan Wolverine Gas & Oil Company of Utah, LLC Wolverine Federal #19-1

situated along Highway 24. The Sevier River is approximately three (3) miles west of this proposed location.

Geology and Soil Types

Again quoting from the "Division of Oil, Gas and Mining, Statement of Basis, Kings Meadow Ranches 17-1", the well "...will likely spud into a thin alluvium covering the evaporate-rich Jurassic age Arapien shale." "The Arapien Shale may have been somewhat intruded or elevated into the area between the Sevier Fault and the considerable parallel secondary faulting mapped in the Cedar Mountain – Black Mountain area..." It is anticipated that from surface to approximately 400 feet in depth, the lithology of the Quaternary will consist of unconsolidated sediments.

The soil type classified at the Wolverine Federal #19-1 wellsite is the Billings silty clay loam. This soil type is a fine-silty, mixed calcareous, mesic Typic Torrifluvents and is usually found in areas containing two (2) to five (5) percent slopes. The soil is a deep, drained, silty clay loam. It features a light gray, moderately alkaline, strongly calcareous, silty clay loam surface soil that is approximately ten (10) inches thick. The subsoils consist of a light gray, moderately alkaline, friable, silty clay loam approximately 32 inches thick. The substrate material is a light gray, moderately alkaline, friable, silty clay loam with a small amount of gypsum veining.

Assuming that the drilling and completion of this well results in its ability to commercially produce hydrocarbons, appropriate market connections will be made upon proper permitting of such activities by all agencies having jurisdiction over said activities.

### II. SOIL EROSION CONTROL MEASURES:

The well pad was sloped at about 1%, in the direction of the site's drainage so as to provide for a well-drained work area during drilling operations. Appropriate collection and infiltration basins were constructed in the sloped area of the drill pad.

In all fill areas, the edges were diked to control run off.

Appropriate drill site drainage and sedimentation control measures were incorporated in the operational plan. These included utilization of earthen dikes along the fill portion of the drilling pad perimeter, stabilization of slopes as needed, location of the reserve pits in the cut portion of the drilling pad and the pad constructed so as to slope toward a collection and infiltration basin. Construction of the drill site was in accordance with the regulations and stipulations as defined by the State of Utah, Department of Natural Resources, Division of Water Rights.

Reclamation of the site was in accordance with Best Management Practices and requirements of the Bureau of Land Management.



State of Utah

Department of Natural Resources

ROBERT L. MORGAN Executive Director

Division of Oil, Gas & Mining

LOWELL P. BRAXTON
Division Director

OLENE S. WALKER

Governor

GAYLE F. McKEACHNIE
Lieutenant Governor

August 19, 2004

Wolverine Gas & Oil Company of Utah, LLC One Riverfront Plaza Grand Rapids, MI 49503

Re:

Wolverine Federal 19-1 Well, Surface Location 857' FSL, 1919' FWL, SE SW, Sec. 17, T. 23 South, R. 1 West, Bottom Location 660' FNL, 660' FEL, NE NE, Sec. 19, T. 23 South, R. 1 West, Sevier County, Utah

### Gentlemen:

Pursuant to the provisions and requirements of Utah Code Ann.§ 40-6-1 et seq., Utah Administrative Code R649-3-1 et seq., and the attached Conditions of Approval, approval to drill the referenced well is granted.

This approval shall expire one year from the above date unless substantial and continuous operation is underway, or a request for extension is made prior to the expiration date. The API identification number assigned to this well is 43-041-30033.

Sincerely,
K Michael Theretwo

In John R. Baza Associate Director

pab Enclosures

cc: Sevier County Assessor

Bureau of Land Management, Moab District Office

Operator: Wolverine Gas & Oil Company of Utah,					
Well Name & Number	Wolverine Federal 19-1				
API Number:					
Lease:	UTU 73528				
Surface Location: SESW	Sec. 17	T. 23 South	<b>R.</b> <u>1 West</u>		
Bottom Location: NE NE	Sec. 19_	T. 23 South	<b>R.</b> <u>1 West</u>		

### **Conditions of Approval**

### 1. General

Compliance with the requirements of Utah Admin. R. 649-1 *et seq.*, the Oil and Gas Conservation General Rules, and the applicable terms and provisions of the approved Application for permit to drill.

### 2. Notification Requirements

Notify the Division within 24 hours of spudding the well.

• Contact Carol Daniels at (801) 538-5284.

Notify the Division prior to commencing operations to plug and abandon the well.

• Contact Dan Jarvis at (801) 538-5338

### 3. Reporting Requirements

All required reports, forms and submittals will be promptly filed with the Division, including but not limited to the Entity Action Form (Form 6), Report of Water Encountered During Drilling (Form 7), Weekly Progress Reports for drilling and completion operations, and Sundry Notices and Reports on Wells requesting approval of change of plans or other operational actions.

- 4. State approval of this well does not supersede the required federal approval, which must be obtained prior to drilling.
- 5. This proposed well is located in an area for which drilling units (well spacing patterns) have not been established through an order of the Board of Oil, Gas and Mining (the "Board"). In order to avoid the possibility of waste or injury to correlative rights, the operator is requested, once the well has been drilled, completed, and has produced, to analyze geological and engineering data generated therefrom, as well as any similar data from surrounding areas if available. As soon as is practicable after completion of its analysis, and if the analysis suggests an area larger than the quarter-quarter section upon which the well is located is being drained, the operator is requested to seek an appropriate order from the Board establishing drilling and spacing units in conformance with such analysis by filing a Request for Agency Action with the Board.
- 6. In accordance with Utah Admin. R.649-3-11, Directional Drilling, the operator shall submit a complete angular deviation and directional survey report to the Division within 30 days following completion of the well.

010



# WOLVERINE GAS AND OIL COMPANY

of Utah, LLC

Rnergy Exploration in Partnership with the Environment

January 28, 2005

T.235, R. IW, S. 17

State of Utah
Division of Oil, Gas & Mining
1594 West North Temple
Suite 1210
Salt Lake City, UT 84114-5801

Via Fax (801) 359-3940

Rc:

Approved APDs

Wolverine Federal 18-1, 19-1 & 20-1

To Whom Jt May Concern:

Wolverinc Gas and Oil Corporation of Utah, as operator of the captioned wells (API Nos. 43-041-30032, 43-041-30033 and 43-041-30034), hereby requests copies of the approved Applications to Drill with any conditions for approval for said wells. Please fax them to my attention at (616) 458-0869.

If you have any questions or concerns, please feel free to contact me.

Very truly,

Suc A. Benson

RECEIVED JAN 2 8 2005

DIV. OF OIL, GAS & MINING



# WOLVERINE GAS AND OIL CORPORATION

One Riverfront Plaza, 55 Campau NW Grand Rapids, Michigan 49503-2616

Telephone: 616.458.1150

2005,01-28

Fax: 616.458,0869

RECIPIENT:

FROM:

MATERIALS SENT:

NUMBER OF PAGES (including this cover sheet):

IF TRANSMISSION IS INCOMPLETE, PLEASE CALL

DATE:

AT 616.458.1150,

TIME:

COMMENTS, IF ANY:

CONFIDENTIALITY NOTICE

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> **RECEIVED** JAN 28 2005



# WOLVERINE GAS AND OIL COMPANY

of Utah, LLC

Energy Exploration in Partnership with the Environment

June 20, 2005

Ms. Diana Whitney State of Utah Division of Oil, Gas & Mining 1594 W. N. Temple, Suite 1210 Salt Lake City, UT 84114

Re: Sundry Notice for Wolverine Federal #19-1

Dear Ms. Whitney:

Please accept this copy of the Sundry for Wolverine Federal #19-1. This Sundry covers the change in the surface location within the B-Pad drilling pad, revised bottomhole location reflecting the most recent information on the structure, and revised drilling prognosis with new directional survey calculations.

A request for exception of spacing and directional drilling (Rule 649-3-3 and Rule 649-3-11, respectively) is hereby requested. Wolverine is the only owner and operator within 460 feet of the proposed well and all points along the intended well bore path. The enclosed diagrams show the location of the proposed bottomhole location relative to the 200' x 200' target window. The directional drilling is required because the well is drilled from a well pad because of topography.

If you have any questions, please call me.

Sincerely,

Edward A. Higuera

Manager-Development

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JUN 2 1 2005

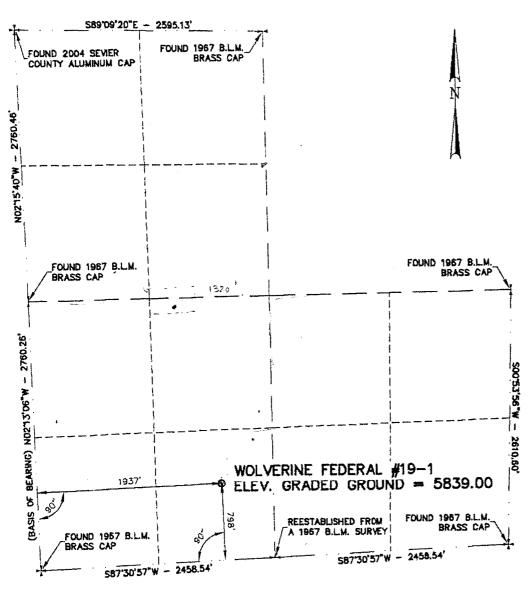
DIV. OF OIL, GAS & MINING

PONEIDENTIAL	STATE OF UTAH				FOKIM 9
CONFIDENTIAL STATE OF UTAH  DEPARTMENT OF NATURAL RESOURCES  DIVISION OF OIL, GAS AND MINING			LEASE DESIGNATION AND SERIAL NUMBER:     UTU-73528     I. IF INDIAN, ALLOTTEE OR TRIBE NAME:		
CHNDDY	NOTICES AND REPORTS	ON WEL	LS	6. IF INDIAN, AL	LOTTEE OR TRIBE NAME:
	ew wells, significantly deepen existing wells below currenterals. Use APPLICATION FOR PERMIT TO DRILL for	ent bottom-hole dept	h, reenter plugged wells, or to	Wolverine	GREEMENT NAME: Fed Exploration Unit
TYPE OF WELL OIL WELL	iterals. Goods ( 2.5)			8. WELL NAME	and NUMBER: Federal #19-1
	GAS WELL ES			9. API NUMBER	
NAME OF OPERATOR: Wolverine Gas and Oil Co	ompany of Utah, LLC			43041300	POOL, OR WILDCAT:
ADDRESS OF OPERATOR:		495063	PHONE NUMBER: (616) 458-1150	Covenan	t Field
	Y Grand Rapids STATE MI ZIE	40000	(0.0)		
LOCATION OF WELL FOOTAGES AT SURFACE: 857' F	SL & 1,919' FWL			COUNTY: Se	evier
QTR/QTR, SECTION, TOWNSHIP, RAN		IW		STATE:	UTAH
OUEOV ADD	ROPRIATE BOXES TO INDICAT	ΓΕ NATURE	OF NOTICE, REPO	RT, OR OT	HER DATA
	T T T T T T T T T T T T T T T T T T T	Т	YPE OF ACTION	_	
TYPE OF SUBMISSION	ACIDIZE	DEEPEN			RFORATE CURRENT FORMATION
NOTICE OF INTENT (Submit in Duplicate)	✓ ALTER CASING	FRACTURE	E TREAT		RACK TO REPAIR WELL
Approximate date work will start:	CASING REPAIR	NEW CON	STRUCTION	느	ORARILY ABANDON
• • • • • • • • • • • • • • • • • • • •	CHANGE TO PREVIOUS PLANS	OPERATO	R CHANGE		IG REPAIR
	CHANGE TUBING	PLUG AND	ABANDON		OR FLARE
SUBSEQUENT REPORT	CHANGE WELL NAME	PLUG BAC		_	R DISPOSAL
(Submit Original Form Only)	CHANGE WELL STATUS		TION (START/RESUME)		R SHUT-OFF
Date of work completion:	COMMINGLE PRODUCING FORMATIONS		ATION OF WELL SITE		R:
	CONVERT WELL TYPE		LETE - DIFFERENT FORMATION		
2. DESCRIBE PROPOSED OR C	COMPLETED OPERATIONS. Clearly show all	pertinent details i	including dates, depths, volur	nes, etc.	
in the preferred bottom h	following changes to be consister note location based on the most re	ecent data or	Jianica nom are care	Surf	· ·
	- from: 857' FSL & 1,919' FWL, to: 798' FSL & 1,937' FWL,	. 500/500, 5E	(CIIOH 17, 1200, 1111	1 41890	
Bottom hole location	from: 660' FNL & 660' FEL. N	E/NE, Section	n 19, 1235, KIVV		
	to: 1,216 FNL & 940 FEL, N	NE/NE, Secti	on 19, 1235, KIVV		7417
Alter casing - from:	9 5/8" at 1,51 13 3/8" at 2,700' +/- 9 5/8" at 6	6.600' +/-	" at 7,550' 7" at 7750' +/-	111.95	(5) g tr -
			38 7915	86	
Revised drilling & directi	ion plan is attached. Feb.	पा४०३५ ४ ५०७७२२ ज	38.7915 4 -111,943	787	3: 6-28-25
NAME (PLEASE PRINT) Edward	I A. Higuera		Manager-Deve	lopment	
SIGNATURE SIGNATURE	well -		DATE 6/20/2005		
(This space for State use only)			roved by the n Division of		RECEIVED
	4	•	as and Mining	$\gamma$	JUN 2 1 2005
	- a a	naa. (5)()	27-05V	1	OH/ ON THE RESERVE

Pederal Approval of this Action is Necessary

DIV. OF OIL, GAS & CENTING

# Section 17, T.23 S., R.1 W., S.L.B. & M.



### BASIS OF BEARINGS

BASIS OF BEARING USED WAS NO2"3'06"W BETWEEN THE SOUTHWEST CORNER AND THE WEST QUARTER CORNER OF SECTION 17, 1.23 S., R.1 W., S.L.B. & M.

LATITUDE = 38'47'50.7946" (38.797442944) LONGITUDE = -111'56'04.9328" (111.934703556)

Euglu.

### **PROJECT**

### Wolverine Gas & Oil Company of Utah. LLC.

WELL LOCATION, LOCATED AS SHOWN IN THE SE 1/4 OF THE SW 1/4 OF SECTION 17, T.23 S., R.1 W., S.L.B. & M. SEVIER COUNTY, UTAH

### LEGEND

= SECTION CORNERS LOCATED

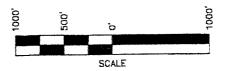
-- = QUARTER SECTION CORNERS LOCATED

@ = PROPOSED WELL HEAD

NOTE: THE PURPOSE OF THIS SURVEY WAS TO PLAT THE WOLVERINE FEDERAL #19-1 LOCATION. LOCATED IN THE SE 1/4 OF THE SW 1/4 OF SECTION 17, T.23 S., R.1 W., S.L.B. & M. SEVIER COUNTY.

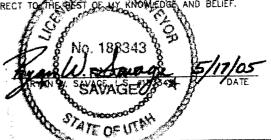
### BASIS OF ELEVATION

ELEVATION BASED ON U.S.G.S. BENCH MARK LOCATED IN THE SW 1/4 OF SECTION 17, T.23 S., R.1 W., S.L.B. & M.



### CERTIFICATE

THIS IS TO CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEYS MADE BY ME OR UNDER MY SUPERVISION. AND HATTIME BAME ARE TRUE AND CORRECT TO THE DEST OF MY KNOWEDGE AND BELIEF.





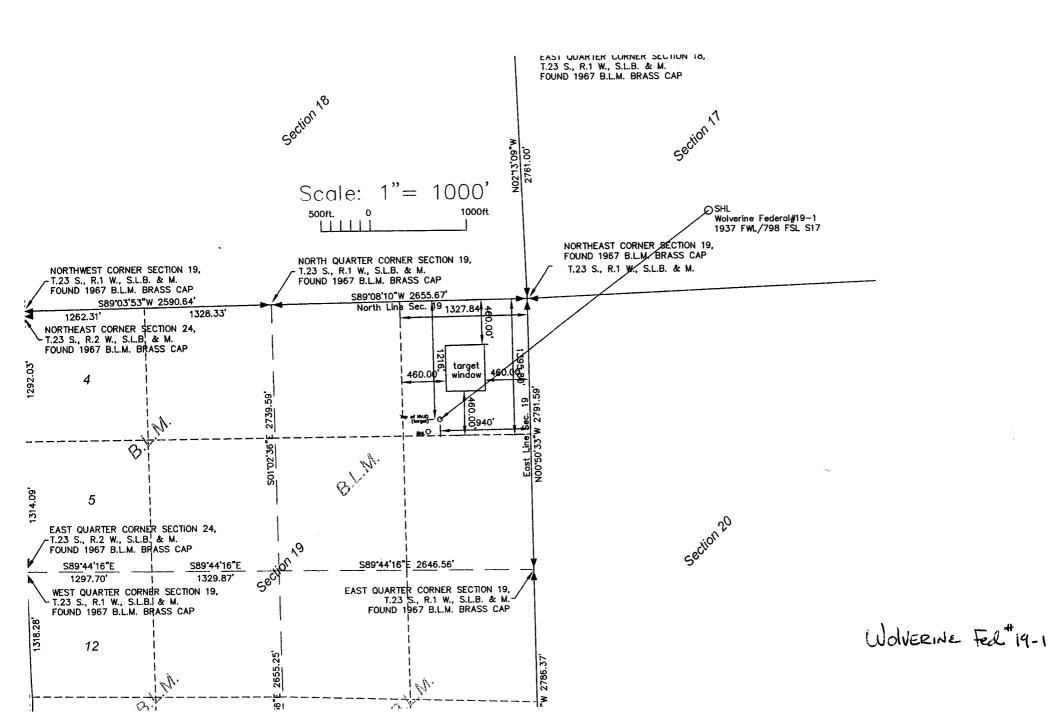
### Jones & DeMille Engineering

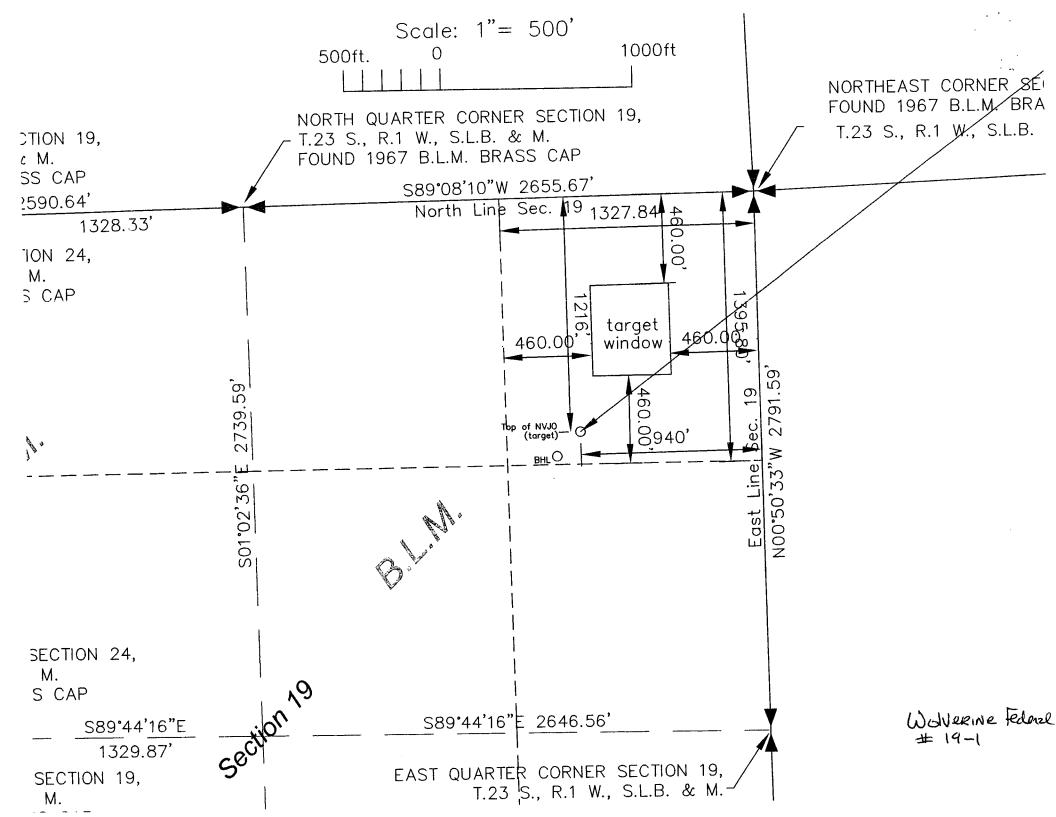
1535 South 100 West — Rionfield, Utah 84701 Phone (435) 896-8266 Fax (435) 898-8265 www.jonesondderniie.com

### Well Location Plat for

Wolverine Gas & Oil Company of Utah, LLC.

DESIGNED	SURVEYED	CHECKED	DRAWN	PROJECT NO.	SHEET NO.
	T.W.G.	R.W.S.	K.B.B.		١.,
DATE		DWG.NAME	SCALE	0505-053	i '
May 2005	1	B_Wells	1" =1000"		<u> </u>





# WOLVERINE GAS AND OIL COMPANY OF UTAH, LLC

### DRILLING PROGNOSIS

Wolverine Federal # 19-1 SE SW SEC 17-T23S-R1W SEVIER CO., UTAH

### **BRIEF DRILLING PLAN**

Due to surface topography constraints, directionally drill a 7750' MD (6650'TVD) test of the Navajo 1 formation on a day work contract basis from Wolverine's present work area known as Drill Pad B-1 (c) located in SE SW of Sec 17 T23S – R01W, Sevier Co, UT. Please refer to the directional drilling plan attached for detailed hole angle, trajectory and target information. Deviation is the primary drilling concern in this area. No abnormal pressure or hydrogen sulfide gas is expected, however, an H2S detector will be utilized. The projected surface and bottomhole locations are to be as follows:

Surface Location:

798' fsl & 1937' fwl of Sec 17 T23S – R01W

BHL @ top of NVJO1 (5931' TVD) 1216' fnl & 940' fel of Sec 19 T23S – R01W

20" conductor casing will be cemented to surface at approximately 120 ft BGL. 13-3/8" surface csg will be set & cemented to surface in a 17-1/2" hole deviated to approximately 35 deg at +/- 2700' MD (+/- 2396' TVD). A 12-1/4" hole will then be drilled to +/- 6730' MD (5700' TVD) maintaining an approximate 35 deg tangent section to 6730'. 9-5/8" protective casing will be set from surface to 12-1/4" TD of 6730' & cemented over the lower 1000'. An 8-1/2" hole will then be drilled at approximately 10 deg to +/- 7750' (6650' TVD). 7" production casing will be run from TD back to surface & cemented to approximately 800' into the 9-5/8" protective casing.

### **EMERGENCY NUMBERS**

Sevier Valley Medical Center	(435)-896-8271
Medical Helicopter	(800)-453-0120
Sheriff Department	(435)-896-2600
Fire Department-Richfield, UT	(435)-896-5479
Bureau of Land Management (Richfield):	(435)-896-1500
Bureau of Land Management (Salt Lake City)	(801) 539-4045
Utah Division of Oil, Gas and Mining (Salt Lake City):	(801)-538-5340

Wolverine Federal #19-1 (B1c) (ver3 2005.06.18) Section 17 T23S-R1W

### United States Bureau of Land Management

Contact Al McKee (801) 539-4045 24 hrs prior to spudding

### **Utah Division of Oil, Gas and Mining**

Contact Carol Daniels (801) 538-5284, 24 hrs prior to spudding

### **GENERAL INFORMATION**

**OBJECTIVE:** Navajo 1 @ 5931' (TVD)

**ELEVATION:** 5839' GL (est) 5856' KB

PROJECTED TOTAL DEPTH:

7750' MD; 6650' TVD

**SURFACE LOCATION:** 

798' FSL & 1937' FWL

Section 17-23S-1W

**COUNTY:** Sevier

STATE: Utah

DIRECTIONS TO LOCATION:

From the town of Sigurd, Utah go south

approximately 4 miles on Hwy #24 to location on

the right side of the road.

### **PROPOSED CASING PROGRAM:**

Hole Size	Casing Size	Wt./Ft.	Grade	Joint	Measured Depth Set
30"	20"	.25 wall	X42	PE welded	120'
17-1/2"	13-3/8"	61#	J-55	STC	0'-2700'
12-1/4"	9-5/8"	* 47#	N-80	LTC	0'-6730'
8-1/2"	7"	** 26#	N-80	LTC	0' -7750'

<sup>\*</sup> due to availability 47# HCP-110 may be substituted for N80

<sup>\*\*</sup> due to availability 23# HCP-110 may be substituted for 26# N80

Hole Size	Casing Size	Drift ID, in.	OD of Couplings	Annular Volume in OH, cf/ft	Annular Volume in Csg, cf/ft	Capacity of casing, cf/ft
30"	20"	Conductor	Na			
17-1/2"	13-3/8"	12.259	14.375	.6946	1.0982	.8406
121/4"	9-5/8"	8.525	10.625	0.3127	0.4659	0.4340
8-1/2	7"	6.250	7.656	.1268	.1438	.2148

### **GEOLOGIC FORMATIONS:**

Formation	Interval (TVD)	Interval (MD)	Lithology	Prod	Abnormal Psi
Arapien	Surf – 5563'	Surf – 6560'	sh, siltstone,salt,evaporites		
TwinCreek1	5563'- 5931'	6560'-7000'	Carbonates	X	
Navajo 1	5931'- 6650'	7000'-7750'	Sandstone w/ minor shale	X	
Total Depth	6650'	7750'			

# CONSTRUCTION OF SURFACE LOCATION

360'x 180' Pad 150'x 100' x 10' Reserve Pit with a 12 mil synthetic liner 96" diameter tin horn cellar, 10' deep. Flare pit a minimum of 100' from wellhead.

### SURFACE HOLE: 120' to 2700'

Directionally drill a 17-1/2" hole with a PDC bit, mud motor & MWD equipment to approximately 2700' using salt mud system from prior well (make hole to fit 13-3/8" casing). Loss circulation could be a problem in this interval and, if such occurs, begin pumping LCM sweeps. If loss circulation cannot be healed with  $\pm 25$  ppb LCM, consider dry drilling (no returns). Maintain hole angle and direction in keeping with the attached directional plan.

# PRESSURE CONTROL & SAFETY EQUIPMENT FOR SURFACE HOLE

### Bottom to Top

20" casing with one 7-1/16" flanged outlet with 7-1/16" HCR valve and 6" blooie line to flare pit

20" drilling nipple with fillup line and 10-3/4" flow line w/ flowline valve 20" rotating head

Upper kelly cock valves with handles available Safety valves and subs to fit all drill string connections in use

Safety valves and subs to fit all drill string connections in use Inside BOP or float sub available

## MUD PROGRAM FOR SURFACE HOLE

DEPTH	MUD WEIGHT	TYPE	VISC	FLUID LOSS
120 -2700'	9.6 – 10.2	Salt mud	40-55	N/C
Note: Sweep	hole every 100 – 20	00 feet or as ne	reded for hole cleani	ng. Maintain maximum
flowrates for	hole cleaning. Use	salt gel and se	ramud to maintain p	roperties.

### CASING PROGRAM FOR SURFACE HOLE

DEPTH	SIZE	LENGTH	WT	GRADE	THREAD	REMARKS
120 - 270	0' 13-3/8"	2700	61#	J-55	ST&C	

Casing Running Sequence:

guide shoe, 1 jt of 13-3/8" 61# J55 ST&C, Float collar, balance of 13-3/8" 61# J55 ST&C, 10 centralizers as reqd. RU cement co., hold safety meeting, test lines, cement 13-3/8" casing per cement company recommendation and the cementing guide below. Displace with fresh water or mud.

### CEMENTING PROGRAM FOR SURFACE HOLE

Lead:

800 sx hi-fill

Mixed at:

11.0 ppg

Yield:

 $3.86 \, \text{ft}^3/\text{sx}$ 

Tail: 470 sx Premium G

Mixed at:

15.8 ppg

Yield:

 $1.18 \, \text{ft}^3/\text{sx}$ 

MUST CIRCULATE CEMENT TO SURFACE If the cement does not circulate to surface contact the BLM and UDOGM office for further instructions and remedial actions. Top out with premium cement regardless of circulation.

### WOC A TOTAL OF 24 HOURS:

Wait 4 hours with the hydrostatic pressure of the displacement fluid in place, then cut off conductor and weld on a 13-5/8" 5M x 13-3/8" SOW casing head w/ MBS spool configured to hang both 9-5/8" and 7" csg strings without nippling down BOPE. NU a 13-5/8" 5M double ram BOP w/ 5M annular and 5M choke manifold rigged to mud/gas separator, mud tanks and flare pit.

# PROTECTIVE CASING HOLE: 2700' to 6730'

Trip in the hole with a 12-1/4" bit, mud motor, MWD & BHA. Drill float, shoe and 20' of new hole. Perform a formation integrity test to 10.5 ppg mud weight equivalent. Directionally drill a 12-1/4" hole with a PDC and/or a TCI rock bit, mud motor, MWD & BHA to approximately 6730' MD using same salt mud system as above. Loss circulation, moving salt, gypsum and anhydrite stringers may be a problem in this interval. Maintain hole angle and azimuth in keeping with the attached directional plan. Protective casing should be set into the top of the Twin Creek formation approximately 100-150'.

### PRESSURE CONTROL AND SAFETY EQUIPMENT FOR PROTECTIVE CASING STRING

### Bottom to Top (see attached 5M BOP diagram)

13-5/8" 5M x 13-3/8" SOW casing head w/ (2) 2-1/16" SSO's (for 9-5/8")

13-5/8" 5M x 13-5/8" 5M multi-bowl casing spool (for 7")

13-5/8" 5M x 13-5/8" spacer spool

13-5/8" 5M x 13-5/8" 5M mud cross with (2) side outlets:

one outlet 2-1/16" 5M kill line

one outlet 3-1/16" 5M choke line

13-5/8" 5M double ram BOP w/ 5" pipe rams top & CSO rams btm

13-5/8" 5M Annular Preventer

13-5/8" 5M rotating head

Connect BOP to choke manifold with pressure guage Upper kelly cock valves with handles available Safety valves and subs to fit all drill string connections in use

Inside BOP or float sub available

### **Testing Procedure:**

### **Annular Preventer**

The annular preventer will be pressure tested to 1500 psi for a period of ten minutes or until provisions of the test are met, whichever is longer. At a minimum, the pressure test will be performed:

- 1) When the annular is initially installed
- 2) Whenever any seal subject to test pressure is broken
- 3) Following related repairs and at 30 day intervals

The annular preventer will be functionally operated once per week.

### Blowout Preventer

The BOP, choke manifold and related equipment will be pressure tested to 4500 psi, or 70% of the internal yield of the casing. Pressure will be maintained for a period of at least ten minutes or until the requirements of the test are met, whichever is longer. At a minimum the pressure test will be performed:

- 1) When the BOP is initially installed
- 2) Whenever any seal subject to test pressure is broken
- 3) Following related repairs and at 30 day intervals

The pipe and blind rams will be activated each trip, but not more than once each day. All BOP drills will be recorded in the IADC driller's log.

### Accumulator:

The accumulator will have sufficient capacity to open the hydraulically controlled gate valve (if so equipped), close all rams plus the annular preventer, and retain a minimum of 200 psig above pre-charge on the closing manifold without the use of the closing unit pumps. The reservoir capacity will be double the accumulator capacity, and the fluid level will be maintained at the manufacturer's recommendations. The accumulator shall have two (2) independent power sources to close the preventers. Nitrogen bottles may be one of

the independent power sources and, if so, shall maintain a charge equal to the manufacturer's specifications.

The accumulator pre-charge pressure test will be conducted prior to connecting the closing unit to the BOP stack and at least once every six months thereafter. The accumulator pressure will be corrected if the measured pre-charge pressure is found to be above or below the maximum or minimum limits specified in Onshore Oil & Gas Order Number 2 (only nitrogen gas may be used to pre-charge).

# Choke Manifold Equipment, Valves and Remote Controls

All choke lines will be straight lines unless turns use tee blocks or are targeted with running tees, and will be anchored to prevent whip and vibration

A valve will be installed in the closing line as close as possible to the annular preventer to act as a locking device. This valve will be maintained in the open position and will be closed only when the power source for the accumulator is inoperative.

Remote controls shall be readily accessible to the driller. Remote controls will be capable of both opening and closing all preventers. Master controls will be at the accumulator and will be capable of opening and closing all preventers and the choke line valve (if so equipped).

The choke manifold and BOP extension rods with hand wheels will be located outside the rig sub structure. The hydraulic BOP closing unit will be located at least twenty-five feet from the well head but readily accessible to the driller.

A flare line will be installed after the choke manifold, extending 100 feet from the center of the drill hole to a separate flare pit.

# MUD PROGRAM FOR PROTECTIVE CASING HOLE

DEPTH	MUD WEIGHT	TYPE	VISC	FLUID LOSS
2700' - 6730'	9.8 – 10.5	Salt Mud	36 - 50	NC

Maintain a salt mud system as salt and gypsum sections are drilled. If loss circulation becomes a problem use LCM sweeps to control seepage & clean hole.

# CASING PROGRAM FOR PROTECTIVE CASING HOLE

DEPTH	SIZE	LENGTH		WT	GRADE	THREAD	REMARKS
0' - TD'	9-5/8"	6730'	*	47#	N-80	LT&C	

Rig up casing tools and run 9-5/8" protective casing as follows:

Float shoe, 2 joint of 9-5/8" \* 47.0# N-80 LT&C casing, float collar, 6 centralizers, middle shoe joint and one every other joint for 12 jts, run balance of 9-5/8" 47# N-80 \* due to availability 47# HCP-110 may be substituted

# CEMENT PROGRAM FOR PROTECTIVE CASING

350 sx 50:50 POZ

Weight:

13.0 ppg

Yield:

 $1.71 \text{ ft}^3/\text{sx}$ 

TOC at  $\sim 5700$ '; Calculate cement volume based on gauge hole plus 30% excess. Displace with mud. Land 9-5/8" csg with casing mandrel. Lay down landing joint. Clean pits and prepare for next hole section.

### PRODUCTION HOLE: 6730' to 7750'

Trip in the hole with an 8-1/2" insert bit, mud motor & MWD. Drill float, shoe and 20' of new hole.

# PRESSURE CONTROL AND SAFETY EQUIPMENT FOR PRODUCTION CASING STRING

Same as Protective String above due to utilization of Multi-Bowl Casing Head Assembly – Land 9-5/8" through BOPE with casing mandrel, release, test & proceed to drilling production hole section – Nipple down & nipple up NOT required – all BOPE remains intact – normal periodic pressure testing remains on schedule

### MUD PROGRAM FOR PRODUCTION HOLE

<u>DEPTH</u>	MUD WEIGHT	TYPE	VISC	pH F	LUID LOSS
6730' - 7750'	8.3 - 9.0	LC Polymer	34-50	9.0-10.0	10cc or Less

### **EVALUATION PROGRAM FOR PRODUCTION HOLE**

At TD, circulate and condition hole clean for logs. Short trip to the intermediate casing monitoring well closely. TOH for logs. Run Induction tool as run #1 to determine hole conditions for logging. Adjust tool configurations depending on hole condition. <a href="Mudlogger: From 2000">Mudlogger: From 2000</a>' to total depth.

Electric Logs:

Tool	PCP to TD
SDL/DSN/GR (DSN PCP to surface casing)	Yes
HRI/GR/SP (DLL/MSFL/SP/GR available if brine system)	Yes
EMI	Yes
NMR	Yes

DST: none planned

Cores: none planned

7

# CASING PROGRAM FOR PRODUCTION HOLE

DEPTH	SIZE	LENGTH	[	WT	GRADE	THREAD	REMARKS
0' – TD'						LT&C	

<sup>\*</sup> due to availability 23# HCP-110 may be substituted for 26# N-80

Rig up casing tools and run 7" production casing as follows:

Float shoe, 1 joint of 7" 26# N-80 LT&C casing, Float collar, Run balance of 7" 26# N80.

# **CEMENT PROGRAM FOR PRODUCTION CASING**

500 sx (50:50) POZ Premium 2 % Bentonite

Weight: 14.33 Yield: 1.27

14.35 ppg 1.27 ft<sup>3</sup>/sx

Friction reducer, salt & flocele

TOC at  $\pm$  5900 ft in 9-5/8" csg; Calculate cement volume based on log caliper  $\pm$  25%. Displace cement w/water. Hang 85-90% casing weight in slips, ND, cut off, install B-section and night cap. Clean pits and release rig.

### **SCHEDULE**

Location preparation is presently scheduled to begin on or about existing Drilling operations are anticipated to begin on or about July 1, 2005 end

### PRESSURE CONTROL SYSTEM SCHEMATIC

Prepared by: EXACT Engineering, Inc Tulsa, OK (918) 599-9400

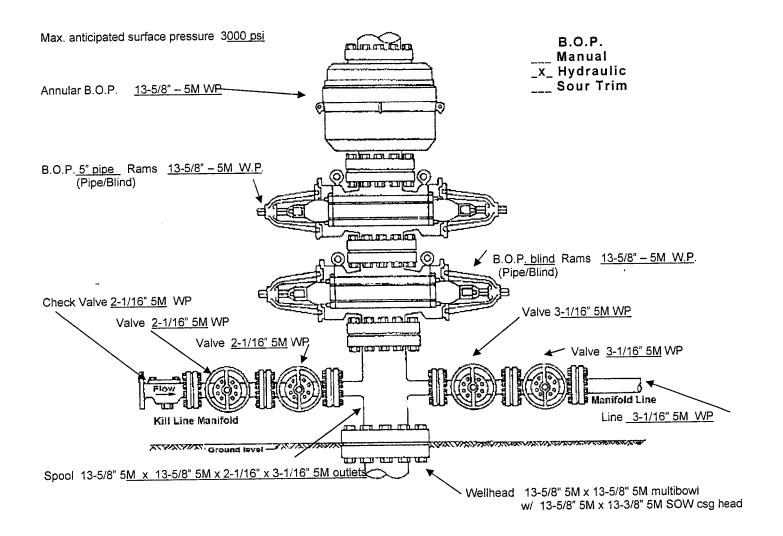
**5M BOP Stack** --- to be utilized while drilling holes for protective and production casings thru lower Arapien, Twin Creek & Navajo intervals

Operator:

Wolverine Gas & Oil Co. of Utah, LLC

Well name and number

Wolverine Federal #19-1



### W \_\_VERINE GAS & OIL CO. OF UTAH Wolverine Fed. 19-1 Sevier County, Utah



				•	SECTION D	ETAILS				
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1 2 3 4 5 6 7	0.00 250.00 783.33 1416.67 6732.59 7732.59 7753.68	0.00 0.00 16.00 35.00 35.00 5.00 5.00	0.00 233.00 233.00 233.00 233.00 233.00 233.00	0.00 250.00 776.43 1345.45 5700.00 6629.00 6650.00	0.00 0.00 -44.53 -207.86 -2042.85 -2246.34 -2247.45	0.00 0.00 -59.09 -275.84 -2710.95 -2980.99 -2982.46	0.00 0.00 3.00 3.00 0.00 3.00 0.00	0.00 233.00 -127.00 0.00 0.00 180.00 0.00	0.00 0.00 73.98 345.38 3394.37 3732.48 3734.32	PBHIL

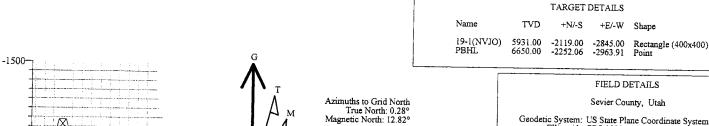
#### SITE DETAILS

Wolverine Federal #19-1(Pad B1) Section 17 23S 1W Sevier County Utah 798' FSL & 1937' FWL

Site Centre Latitude: 38°47'50.795N Longitude: 111°56'04.933W

Water Depth: 0.00 Positional Uncertainty: 0.00 Convergence: -0.28

			WELL DET	AILS				
Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot	
Wolverine Federal 19-1	0.00	0.00	6731032.57	1516515.42	38°47'50.795N	111°56'04.933W	N/A	

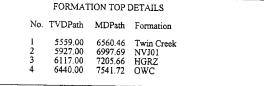


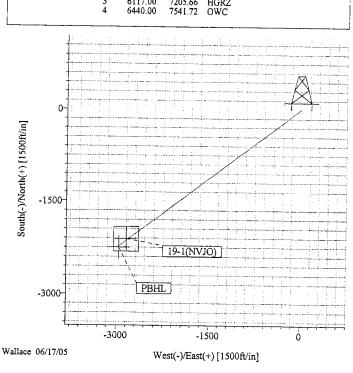
Magnetic Field Strength: 51933nT Dip Angle: 64.51° Date: 6/9/2005 Model: igrf2005

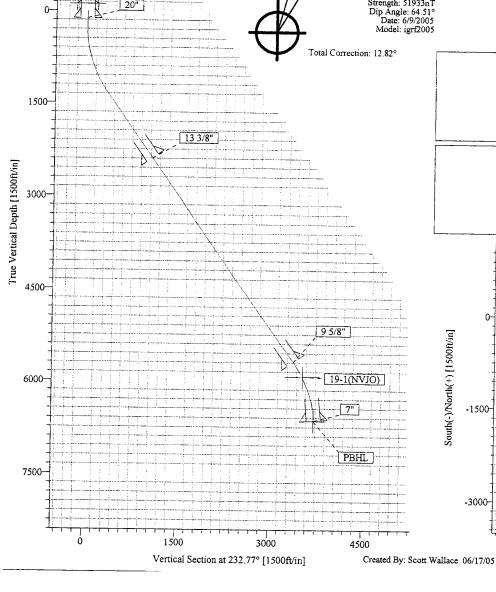
# Geodetic System: US State Plane Coordinate System 1983 Ellipsoid: GRS 1980 Zone: Utah, Central Zone Magnetic Model: igrI2005

System Datum: Mean Sea Level Local North: Grid North

		CASIN	IG DETAILS	
No.	TVD	MD	Name	Size
1 2 3 4	123.00 2396.70 5700.00 6649.00	123.00 2700.00 6732.59 7752.67	20" 13 3/8" 9 5/8" 7"	20.000 13.375 9.625 7.000







### **Planning Report**

Company: Wolverine Gas & Oil Co of Utah Sevier County, Utah Field:

Wolverine Federal #19-1(Pad B1) Site: Well:

Wolverine Federal 19-1

Wellpath:

6/17/2005

Time: 14:51:37 Co-ordinate(NE) Reference: Well: Wolverine Federal 19-1, Grid North

System: Mean Sea Level Vertical (TVD) Reference: User (0.00N,0.00E,232.53Azi) Section (VS) Reference:

Plan:

Plan #2

Field:

Sevier County, Utah

Map System: US State Plane Coordinate System 1983

Geo Datum: GRS 1980 Sys Datum: Mean Sea Level Map Zone:

Utah, Central Zone Well Centre

Page:

Coordinate System: Geomagnetic Model: igrf2005

Site:

Wolverine Federal #19-1(Pad B1)

Section 17 23S 1W Sevier County Utah

798' FSL & 1937' FWL

Site Position: From: Geographic Position Uncertainty:

0.00 ft 0.00 ft Northing:

Northing:

Easting:

Height

+N/-S

ft

0.00

Easting:

6731032.57 ft 1516515.42 ft Latitude: Longitude:

38 47 50.795 N 111 56 4.933 W

North Reference: Grid Convergence:

Grid -0.28 deg

Wolverine Federal 19-1

+N/-S +E/-W

0.00 ft 0.00 ft

Mean Sea Level

Depth From (TVD)

ft

0.00

6/9/2005

6731032.57 ft 1516515.42 ft Latitude: Longitude:

Slot Name:

47 38 50.795 N 56 4.933 W 111

Position Uncertainty: Wellpath: 1

Current Datum:

Magnetic Data:

Field Strength:

Vertical Section:

Well Position:

Ground Level:

0.00 ft

51933 nT

0.00 ft

Drilled From: Tie-on Depth: Above System Datum: Declination:

0.00 ft Mean Sea Level 12.55 deg 64.51 deg

Mag Dip Angle: +E/-W ft

Direction deg

0.00 232.53

Plan:

Plan #2

Date Composed:

6/9/2005

Principal: Yes

Plan Section Information

Tied-to:	From Surface
Version:	2
Date Composed.	

	MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	TFO deg	Target
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
П	250.00	0.00	233.00	250.00	0.00	0.00	0.00	0.00	0.00	233.00	
П	783.33	16.00	233.00	776.43	-44.53	-59.09	3.00	3.00	0.00	-127.00	
П	1416.67	35.00	233.00	1345.45	-207.86	-275.84	3.00	3.00	0.00	0.00	
П	6732.59	35.00	233.00	5700.00	-2042.85	-2710.95	0.00	0.00	0.00	0.00	
1	7732.59	5.00	233.00	6629.00	-2246.34	-2980.99	3.00	-3.00	0.00	180.00	
1	7753.68	5.00	233.00	6650.00	-2247.45	-2982.46	0.00	0.00	0.00	0.00	PBHL
1	L										

### Section 1: Start Hold

MD	Incl	Azim	TVD	+N/-S	+E/-W	VS	DLS	Build	Turn	TFO	
ft	deg	deg	ft	ft	ft	ft	deg/100ft	t deg/100f	t deg/100ft	deg	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	233.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	233.00	
123.00	0.00	233.00	123.00	0.00	0.00	0.00	0.00	0.00	0.00	233.00	
200.00	0.00	233.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	233.00	
250.00	0.00	233.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	233.00	

#### Section 2: Start Build 3.00

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100f	Turn t deg/100ft	TFO deg
300.00	1.50	233.00	299.99	-0.39	-0.52	0.65	3.00	3.00	0.00	0.00
400.00	4.50	233.00	399.85	-3.54	-4.70	5.89	3.00	3.00	0.00	0.00
500.00	7.50	233.00	499.29	-9.83	-13.05	16.34	3.00	3.00	0.00	0.00
600.00	10.50	233.00	598.04	-19.25	-25.54	31.98	3.00	3.00	0.00	0.00
700.00	13.50	233.00	695.85	-31.76	-42.14	52.77	3.00	3.00	0.00	0.00
783.33	16.00	233.00	776.43	-44.53	-59.09	73.98	3.00	3.00	0.00	0.00

# **Planning Report**

Company: Wolverine Gas & Oil Co of Utah Field: Sevier County, Utah

Site: Wolverine Federal #19-1(Pad B1) Wolverine Federal 19-1 Well:

Wellpath: 1

Date: 6/17/2005 Time: 14:51:37 Page: Co-ordinate(NE) Reference: Well: Wolverine Federal 19-1, Grid North

Vertical (TVD) Reference: System: Mean Sea Level Section (VS) Reference:

User (0.00N,0.00E,232.53Azi) Plan #2

	_		_	
Section	3 .	Start	Build	3 በበ

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ff	Build t deg/100ft	Turn deg/100ft	TFO deg
800.00	16.50	233.00	792.43	-47.33	-62.81	78.65	3.00	3.00	0.00	0.00
900.00	19.50	233.00	887.52	-65.93	-87.49	109.54	3.00	3.00	0.00	0.00
1000.00	22.50	233.00	980.87	-87. <b>49</b>	-116.11	145.37	3.00	3.00	0.00	0.00
1100.00	25.50	233.00	1072.22	-111.97	-148.58	186.04	3.00	3.00	0.00	0.00
1200.00	28.50	233.00	1161.31	-139.29	-184.84	231.43	3.00	3.00	0.00	0.00
1300.00	31.50	233.00	1247.90	-169.37	-224.77	281.43	3.00	3.00	0.00	0.00
1400.00	34.50	233.00	1331.76	-202.15	-268.26	335.88	3.00	3.00	0.00	0.00
1416.67	35.00	233.00	1345.45	-207.86	-275.84	345.38	3.00	3.00	0.00	0.00

### Section 4: Start Hold

MD	Incl		TYD	IN/C	. 171 / 177					· · · · · · · · · · · · · · · · · · ·	
ft	deg	Azim deg	TVD ft	+N/-S ft	+E/-W	VS	DLS	Build	Turn	TFO	
<del></del>					ft	ft	deg/1001	t deg/100f	t deg/100ft	deg	
1500.00	35.00	233.00	1413.71	-236.63	-314.02	393.18	0.00	0.00	0.00	0.00	
1600.00	35.00	233.00	1495.63	-271.15	-359.83	450.53	0.00	0.00	0.00	0.00	
1700.00	35.00	233.00	1577.54	-305.67	-405.63	507.89	0.00	0.00	0.00	0.00	
1800.00	35.00	233.00	1659.46	-340.19	-451.44	565.25	0.00	0.00	0.00	0.00	
1900.00	35.00	233.00	1741.37	-374.70	-497.25	622.60	0.00	0.00	0.00	0.00	
2000.00	35.00	233.00	1823.29	-409.22	-543.06	679.96	0.00	0.00	0.00	0.00	
2100.00	35.00	233.00	1905.20	-443.74	-588.86	737.31	0.00	0.00	0.00	0.00	
2200.00	35.00	233.00	1987.12	-478.26	-634.67	794.67	0.00	0.00	0.00	0.00	
2300.00	35.00	233.00	2069.03	-512.78	-680.48	852.02	0.00	0.00	0.00	0.00	
2400.00	35.00	233.00	2150.95	-547.30	-726.29	909.38	0.00	0.00	0.00	0.00	
2500.00	35.00	233.00	2232.87	-581.82	-772.10	966.74	0.00	0.00	0.00	0.00	
2600.00	35.00	233.00	2314.78	-616.33	-817.90	1024.09	0.00	0.00	0.00	0.00	
2700.00	35.00	233.00	2396.70	-650.85	-863.71	1081.45	0.00	0.00	0.00	0.00	
2800.00	35.00	233.00	2478.61	-685.37	-909.52	1138.80	0.00	0.00	0.00	0.00	
2900.00	35.00	233.00	2560.53	-719.89	-955.33	1196.16	0.00	0.00	0.00	0.00	
3000.00	35.00	233.00	2642.44	-754.41	-1001.13	1253.51	0.00	0.00	0.00	0.00	
3100.00	35.00	233.00	2724.36	-788.93	-1046.94	1310.87	0.00	0.00	0.00		
3200.00	35.00	233.00	2806.27	-823.45	-1092.75	1368.23	0.00	0.00	0.00	0.00	
3300.00	35.00	233.00	2888.19	-857.97	-1138.56	1425.58	0.00	0.00		0.00	
3400.00	35.00	233.00	2970.10	-892.48	-1184.37	1482.94	0.00	0.00	0.00	0.00	
3500.00	35.00	233.00	3052.02	-927.00	-1230.17	1540.29	0.00	0.00	0.00	0.00	
3600.00	35.00	233.00	3133.93	-961.52	-1275.98	1597.65	0.00	0.00	0.00	0.00	
3700.00	35.00	233.00	3215.85	-996.04	-1321.79	1655.00		0.00	0.00	0.00	
3800.00	35.00	233.00	3297.76	-1030.56	-1367.60		0.00	0.00	0.00	0.00	
3900.00	35.00	233.00	3379.68	-1065.08	-1413.41	1712.36 1769.72	0.00	0.00	0.00	0.00	1
4000.00	35.00	233.00	3461.59	-1005.00	-1413.41	1/09./2	0.00	0.00	0.00	0.00	l
4100.00	35.00	233.00	3543.51			1827.07	0.00	0.00	0.00	0.00	i
4200.00	35.00	233.00	3625.42	-1134.11 -1168.63	-1505.02	1884.43	0.00	0.00	0.00	0.00	
4300.00	35.00	233.00	3707.34		-1550.83	1941.78	0.00	0.00	0.00	0.00	
4400.00	35.00	233.00	3789.25	-1203.15	-1596.64	1999.14	0.00	0.00	0.00	0.00	1
4500.00	35.00	233.00	3871.17	-1237.67 -1272.19	-1642.44	2056.49	0.00	0.00	0.00	0.00	l
4600.00	35.00	233.00	30/1.1/		-1688.25	2113.85	0.00	0.00	0.00	0.00	ļ
4700.00	35.00	233.00	3953.08	-1306.71	-1734.06	2171.21	0.00	0.00	0.00	0.00	i
4800.00	35.00 35.00	233.00	4035.00	-1341.23	-1779.87	2228.56	0.00	0.00	0.00	0.00	ļ
4900.00		233.00	4116.91	-1375.75	-1825.68	2285.92	0.00	0.00	0.00	0.00	
5000.00	35.00 35.00	233.00	4198.83	-1410.26	-1871.48	2343.27	0.00	0.00	0.00	0.00	
		233.00	4280.75	-1444.78	-1917.29	2400.63	0.00	0.00	0.00	0.00	
5100.00	35.00	233.00	4362.66	-1479.30	-1963.10	2457.98	0.00	0.00	0.00	0.00	
5200.00	35.00	233.00	4444.58	-1513.82	-2008.91	2515.34	0.00	0.00	0.00	0.00	
5300.00	35.00	233.00	4526.49	-1548.34	-2054.72	2572.70	0.00	0.00	0.00	0.00	
5400.00	35.00	233.00	4608.41	-1582.86	-2100.52	2630.05	0.00	0.00	0.00	0.00	
5500.00	35.00	233.00	4690.32	-1617.38	-2146.33	2687.41	0.00	0.00	0.00	0.00	
5600.00	35.00	233.00	4772.24	-1651.90	-2192.14	2744.76	0.00	0.00	0.00	0.00	
5700.00	35.00	233.00	4854.15	-1686.41	-2237.95	2802.12	0.00	0.00	0.00	0.00	
5800.00	35.00	233.00	4936.07	-1720.93	-2283.75	2859.47	0.00	0.00	0.00	0.00	
5900.00	35.00	233.00	5017.98	-1755.45	-2329.56	2916.83	0.00	0.00	0.00	0.00	
6000.00	35.00	233.00	5099.90	-1789.97	-2375.37	2974.19	0.00	0.00	0.00	0.00	į
6100.00	35.00	233.00	5181.81	-1824.49	-2421.18	3031.54	0.00	0.00	0.00	0.00	İ
6200.00	35.00	233.00	5263.73	-1859.01	-2466.99	3088.90	0.00	0.00	0.00	0.00	ļ
6300.00	35.00	233.00	5345.64	-1893.53	-2512.79	3146.25	0.00	0.00	0.00	0.00	Ì
6400.00	35.00	233.00	5427.56	-1928.04	-2558.60	3203.61	0.00	0.00	0.00	0.00	
6500.00	35.00	233.00	5509.47	-1962.56	-2604.41	3260.96	0.00	0.00	0.00	0.00	
		*****	· <del></del>					J.55		0.00	

### **Planning Report**

Company: Wolverine Gas & Oil Co of Utah 6/17/2005 Date: Time: 14:51:37 Page: 3 Co-ordinate(NE) Reference: Well: Wolverine Federal 19-1, Grid North Field: Sevier County, Utah Site: Wolverine Federal #19-1(Pad B1) Vertical (TVD) Reference: System: Mean Sea Level Well Wolverine Federal 19-1 Section (VS) Reference: User (0.00N,0.00E,232.53Azi) Wellpath: Plan #2 4 : Start Hold Section MD Incl Azim TVD +N/-S +E/-W VS DLS Build TFO Turn deg deg ft deg/100ft deg/100ft deg/100ft ft ft deg 6560.46 35.00 233.00 5559.00 -1983.43 -2632.11 3295.64 0.00 0.00 0.00 0.00 35.00 6600 00 233.00 5591 39 -1997.08 -2650.22 3318.32 0.00 0.00 0.00 0.00 6700.00 35.00 233.00 5673.30 -2031.60 -2696.03 3375.68 0.00 0.00 0.00 0.00 6732.59 35.00 233.00 5700.00 -2042.85 -2710.95 3394.37 0.00 0.00 0.00 0.00 5 : Start Drop -3.00 Section MD Incl Azim TVD +N/-S +E/-W VS DLS Build TFO Turn ft deg deg ft ft ft ft deg/100ft deg/100ft deg/100ft deg 32.98 233.00 6800.00 5755.89 -2065.53 -2741.05 3432.05 3.00 -3.00 0.00 180.00 6900.00 29.98 233.00 5841.16 -2096.95 -2782.75 3484.26 3.00 -3.00 0.00 180.00 6997.69 27.05 233.00 5927.00 -2125.01 -2819.99 3530.89 3.00 -3.000.00 -180.00 7000.00 26.98 233.00 5929.05 -2125.64 -2820.82 3531.93 3.00 -3.00 0.00 180.00 7002.18 26.91 233.00 5931.00 -2126.24 -2821.61 3532.92 3.00 -3.000.00 -180.007100.00 23.98 233.00 6019.32 -2151.53 -2855.17 3574.94 3.00 -3.000.00 180.00 7200.00 20.98 233.00 6111.71 -2174 53 -2885.70 3613.17 3.00 -3.000.00 180.00 7205.66 20.81 233.00 6117.00 -2175.75 -2887.31 3615.19 3.00 -3.00 0.00 -180.00 7300.00 17.98 233.00 6205.98 -2194.60 -2912.33 3646.51 3.00 -3.00 0.00 180.00 7400.00 14.98 233.00 6301.86 -2211.67 -2934.98 3674 87 3.00 -3.00 0.00 180.00 7500.00 1198 233.00 6399.10 -2953.59 -2225.693698.17 3.00 -3.000.00 180.00 7541.72 10.73 233.00 6440.00 -2230.63 -2960.15 3706.38 3.00 -3.000.00 -180.00 7600.00 8.98 233.00 6497.42 -2236.63 -2968.11 3716.35 3.00 -3.00 0.00 180.00 7700.00 5.98 233.00 6596.55 -2244.46 -2978.50 -3.003729.37 3.00 0.00180.00 7732.59 5.00 233.00 6629.00 -2246.34 -2980.99 3732.48 3.00 -3.000.00 -180.00 Section 6: Start Hold MD Incl TVD Azim +N/-S+E/-W VS DLS Build TFO Turn ft deg deg ft ft ft ft deg/100ft deg/100ft deg/100ft dea 233.00 5.00 7752.67 6649.00 -2247.39 -2982.39 3734.23 0.00 0.00 0.00 0.00 7753.68 5.00 233.00 6650.00 -2247.45 -2982.46 3734.32 0.00 0.00 0.00 0.00 Survey TVD MD Incl +N/-S +E/-W Azim VS DLS Build Turn Tool/Comment ft ft deg deg ft ft ft deg/100ft deg/100ft deg/100ft 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 100.00 0.00 233.00 100.00 0.00 0.00 0.00 0.00 0.00 0.00 MWD 123.00 0.00233.00 123.00 0.00 0.00 0.00 0.00 0.00 0.00 20" 200.00 0.00 233.00 200.00 0.00 MWD 0.00 0.00 0.00 0.00 0.00 250.00 0.00 233.00 250.00 0.00 0.00 0.00 0.00 0.00 0.00 MWD 300.00 1.50 233.00 299.99 -0.39 -0.52 0.65 3.00 3.00 0.00 MWD 400.00 4.50 233.00 399.85 -3.54 -4.705.89 3.00 3.00 0.00 MWD 500.00 7.50 233.00 499.29 -9.83 -13.05 16.34 3.00 3.00 0.00 MWD 600.00 10.50 233.00 598.04 -19.25-25.54 31.98 3.00 3.00 0.00 MWD 700.00 13.50 233.00 695.85 -31.76 -42.14 52.77 3.00 3.00 0.00 MWD 783.33 16.00 233.00 776.43 -44.53 -59.09 73.98 3.00 3.00 0.00 MWD 16.50 800.00 233.00 792.43 -47.33-62.81 78.65 3.00 3.00 0.00 MWD 900.00 19.50 233.00 887.52 -65.93 109.54 -87.49 3.00 3.00 0.00 MWD 1000.00 22.50 233.00 980.87 -87.49 -116.11 145.37 3.00 3.00 0.00 MWD 1100.00 25.50 233.00 1072.22 -111.97 186.04 -148.583.00 3.00 0.00 MWD 28.50 1200.00 233.00 1161.31 -139.29 -184.84 231.43 3.00 3.00 0.00 MWD 1300.00 31.50 233.00 1247.90 -169.37 -224.77 281.43 3.00 3.00 0.00 MWD 34.50 1331.76 1400.00 233.00 -268.26 335.88 -202.153.00 3.00 0.00 MWD 1416.67 35.00 233.00 1345.45 -207.86 -275.84 345.38 3.00 3.00 0.00 MWD 1500.00 35.00 233.00 1413.71 -236.63 -314.02393.18 0.00 0.00 0.00 MWD 1600.00 35.00 233.00 1495.63 -271.15 -359.83 450.53 0.00 0.00 0.00 MWD 1700.00 35.00 233.00 1577.54 -305.67 -405.63 507.89 0.00 0.00 0.00 MWD 1800.00 35.00 233.00 1659.46 -340.19 -451.44 565 25 0.00 0.00 0.00 MWD

1900.00

35.00

233.00

1741.37

-374.70

-497.25

622.60

0.00

0.00

0.00

MWD

# **Planning Report**

Field:

Company: Wolverine Gas & Oil Co of Utah

Sevier County, Utah

Site: Wolverine Federal 19-1 Well:

Wolverine Federal #19-1(Pad B1)

Wellpath: 1

Date: 6/17/2005 Time: 14:51:37 Page:
Co-ordinate(NE) Reference: Well: Wolverine Federal 19-1, Grid North
Vertical (TVD) Reference: System: Mean Sea Level
Section (VS) Reference: User (0.00N,0.00E,232.53Azi)
Plan: #2

Survey										
MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
2000.00	35.00	233.00	1823.29	-409.22	-543.06	679.96	0.00	0.00	0.00	MWD
2100.00	35.00	233.00	1905.20	-443.74	-588.86	737.31	0.00	0.00	0.00	MWD
2200.00	35.00	233.00	1987.12	-478.26	-634.67	794.67	0.00	0.00	0.00	MWD
2300.00	35.00	233.00	2069.03	-512.78	-680.48	852.02	0.00	0.00	0.00	MWD
2400.00	35.00	233.00	2150.95	-547.30	-726.29	909.38	0.00	0.00	0.00	MWD
2500.00	35.00	233.00	2232.87	-581.82	-772.10	966.74	0.00	0.00	0.00	MWD
2600.00	35.00	233.00	2314.78	-616.33	-817.90	1024.09	0.00	0.00	0.00	MWD
2700.00	35.00	233.00	2396.70	-650.85	-863.71	1081.45	0.00	0.00	0.00	13 3/8"
2800.00	35.00	233.00	2478.61	-685.37	-909.52	1138.80	0.00	0.00	0.00	MWD
2900.00	35.00	233.00	2560.53	-719.89	-955.33	1196.16	0.00	0.00	0.00	MWD
3000.00	35.00	233.00	2642.44	-754.41	-1001.13	1253.51	0.00	0.00	0.00	MWD
3100.00	35.00	233.00	2724.36	-788.93	-1046.94	1310.87	0.00	0.00	0.00	MWD
3200.00	35.00	233.00	2806.27	-823.45	-1092.75	1368.23	0.00	0.00	0.00	MWD
3300.00	35.00	233.00	2888.19	-857.97	-1138.56	1425.58	0.00	0.00	0.00	MWD MWD
3400.00	35.00	233.00	2970.10	-892.48	-1184.37	1482.94	0.00	0.00	0.00	MWD
3500.00	35.00	233.00	3052.02	-927.00	-1230.17	1540.29	0.00	0.00	0.00	
3600.00	35.00	233.00	3133.93	-961.52	-1275.98	1597.65	0.00	0.00	0.00	MWD
3700.00	35.00	233.00	3215.85	-996.04	-1321.79	1655.00	0.00	0.00	0.00	MWD MWD
3800.00	35.00	233.00	3297.76	-1030.56	-1367.60	1712.36	0.00	0.00	0.00	
3900.00	35.00	233.00	3379.68	-1065.08	-1413.41	1769.72	0.00	0.00	0.00 0.00	MWD MWD
4000.00	35.00	233.00	3461.59	-1099.60	-1459.21	1827.07	0.00	0.00	0.00	
4100.00	35.00	233.00	3543.51	-1134.11	-1505.02	1884.43	0.00	0.00	0.00	MWD MWD
4200.00	35.00	233.00	3625.42	-1168.63	-1550.83	1941.78	0.00	0.00	0.00	MWD
4300.00	35.00	233.00	3707.34	-1203.15	-1596.64	1999.14	0.00	0.00	0.00 0.00	MWD
4400.00	35.00	233.00	3789.25	-1237.67	-1642.44	2056.49	0.00	0.00 0.00	0.00	MWD
4500.00	35.00	233.00	3871.17	-1272.19	-1688.25	2113.85	0.00	0.00		
4600.00	35.00	233.00	3953.08	-1306.71	-1734.06	2171.21	0.00	0.00	0.00	MWD
4700.00	35.00	233.00	4035.00	-1341.23	-1779.87	2228.56	0.00	0.00	0.00	MWD
4800.00	35.00	233.00	4116.91	-1375.75	-1825.68	2285.92	0.00	0.00	0.00	MWD
4900.00	35.00	233.00	4198.83	-1410.26	-1871.48	2343.27	0.00	0.00	0.00	MWD
5000.00	35.00	233.00	4280.75	-1444.78	-1917.29	2400.63	0.00	0.00	0.00	MWD
5100.00	35.00	233.00	4362.66	-1479.30	-1963.10	2457.98	0.00	0.00	0.00	MWD
5200.00	35.00	233.00	4444.58	-1513.82	-2008.91	2515.34	0.00	0.00	0.00	MWD
5300.00	35.00	233.00	4526.49	-1548.34	-2054.72	2572.70	0.00	0.00	0.00	MWD
5400.00	35.00	233.00	4608.41	-1582.86	-2100.52	2630.05	0.00	0.00	0.00	MWD
5500.00	35.00	233.00	4690.32	-1617.38	-2146.33	2687.41	0.00	0.00	0.00	MWD
5600.00	35.00	233.00	4772.24	-1651.90	-2192.14	2744.76	0.00	0.00	0.00	MWD
5700.00	35.00	233.00	4854.15	-1686.41	-2237.95	2802.12	0.00	0.00	0.00	MWD MWD
5800.00	35.00	233.00	4936.07	-1720.93	-2283.75	2859.47	0.00	0.00	0.00	MWD
5900.00	35.00	233.00	5017.98	-1755.45		2916.83	0.00	0.00	0.00	MWD
6000.00	35.00	233.00	5099.90	-1789.97	-2375.37	2974.19	0.00	0.00	0.00	MAAD
6100.00	35.00	233.00	5181.81	-1824.49	-2421.18	3031.54	0.00	0.00	0.00	MWD MWD
6200.00	35.00	233.00	5263.73	-1859.01	-2466.99	3088.90	0.00	0.00	0.00	MWD
6300.00	35.00	233.00	5345.64	-1893.53	-2512.79	3146.25	0.00	0.00	0.00 0.00	MWD
6400.00	35.00	233.00	5427.56	-1928.04	-2558.60	3203.61	0.00	0.00 0.00	0.00	MWD
6500.00	35.00	233.00	5509.47	-1962.56	-2604.41	3260.96	0.00			
6560.46	35.00	233.00	5559.00	-1983.43	-2632.11	3295.64	0.00 0.00	0.00 0.00	0.00 0.00	Twin Creek MWD
6600.00	35.00	233.00	5591.39	-1997.08	-2650.22	3318.32	0.00	0.00	0.00	MWD
6700.00	35.00	233.00	5673.30	-2031.60	-2696.03	3375.68 3394.37	0.00	0.00	0.00	9 5/8"
6732.59	35.00	233.00	5700.00	-2042.85	-2710.95 2741.05	3394.37	3.00	-3.00	0.00	MWD
6800.00	32.98	233.00	5755.89	-2065.53	-2741.05					
6900.00	29.98	233.00	5841.16	-2096.95	-2782.75	3484.26	3.00	-3.00 -3.00	0.00 0.00	MWD NVJ01
6997.69	27.05	233.00	5927.00	-2125.01	-2819.99	3530.89	3.00	-5.00	0.00	144001

# Weatherford International

## **Planning Report**

Company: Wolverine Gas & Oil Co of Utah

Field: Site:

Sevier County, Utah Wolverine Federal #19-1(Pad B1) Wolverine Federal 19-1 Well: Wellpath: 1

Date: 6/17/2005 Time: 14:51:37 Page:
Co-ordinate(NE) Reference: Well: Wolverine Federal 19-1, Grid North
Vertical (TVD) Reference: System: Mean Sea Level
Section (VS) Page:

Section (VS) Reference: User (0.00N,0.00E,232.53Azi) Plan #2

~ ~	BENTATI
	urvev

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100f	Build t deg/100f	Turn t deg/100ft	Tool/Comment
7000.00	26.98	233.00	5929.05	-2125.64	-2820.82	3531.93	3.00	-3.00	0.00	MWD
7002.18	26.91	233.00	5931.00	-2126.24	-2821.61	3532.92	3.00	-3.00	0.00	19-1(NVJO)
7100.00	23.98	233.00	6019.32	-2151.53	-2855.17	3574.94	3.00	-3.00	0.00	MWD
7200.00	20.98	233.00	6111.71	-2174.53	-2885.70	3613.17	3.00	-3.00	0.00	MWD
7205.66	20.81	233.00	6117.00	-2175.75	-2887.31	3615.19	3.00	-3.00	0.00	HGRZ
7300.00	17.98	233.00	6205.98	-2194.60	-2912.33	3646.51	3.00	-3.00	0.00	MWD
7400.00	14.98	233.00	6301.86	-2211.67	-2934.98	3674.87	3.00	-3.00	0.00	MWD
7500.00	11.98	233.00	6399.10	-2225.69	-2953.59	3698.17	3.00	-3.00	0.00	MWD
7541.72	10.73	233.00	6440.00	-2230.63	-2960.15	3706.38	3.00	-3.00	0.00	OWC
7600.00	8.98	233.00	6497.42	-2236.63	-2968.11	3716.35	3.00	-3.00	0.00	MWD
7700.00	5.98	233.00	6596.55	-2244.46	-2978.50	3729.37	3.00	-3.00	0.00	MWD
7732.59	5.00	233.00	6629.00	-2246.34	-2980.99	3732.48	3.00	-3.00	0.00	MWD
7752.67	5.00	233.00	6649.00	-2247.39	-2982.39	3734.23	0.00	0.00	0.00	7"
7753.68	5.00	233.00	6650.00	-2247.45	-2982.46	3734.32	0.00	0.00	0.00	PBHL

### Targets

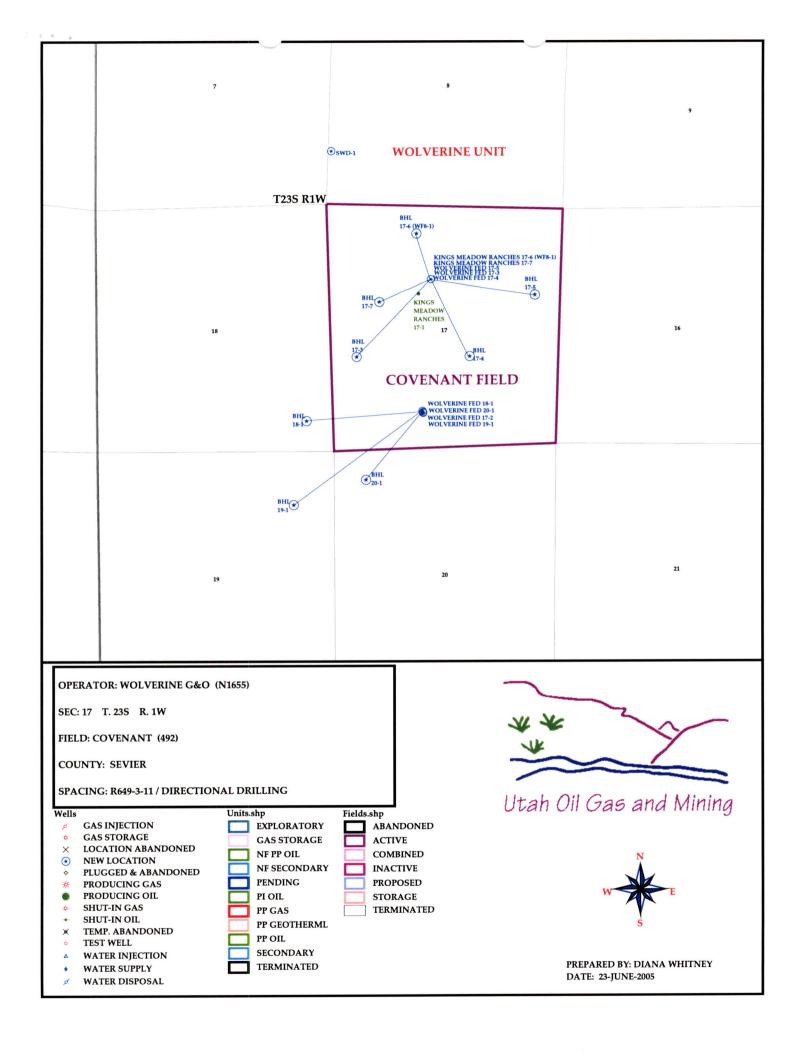
Name	Description Dip.	Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	< Latitude> Deg Min Sec	< Longitude> Deg Min Sec
19-1(NVJO) -Rectangle (4	00x400)		5931.00	-2119.00	-2845.00	6728913.571	1513670.42	38 47 29.713 N	111 56 40.732 W
-Plan out by 2 PBHL -Plan out by 1	24.48 at		5931.00 6650.00 6650.00	-2126.24 -2252.06 -2247.45	-2821.61 -2963.91 -2982.46	6728906.341 6728780.511 6728785.131	1513551.51	38 47 29.642 N 38 47 28.392 N 38 47 28.437 N	111 56 40.436 W 111 56 42.225 W 111 56 42.460 W

### **Casing Points**

MD ft	TVD ft	Diameter in	Hole Size in	Name	
123.00	123.00	20.000	26.000	20"	
2700.00	2396.70	13.375	17.500	13 3/8"	
6732.59	5700.00	9.625	12.250	9 5/8"	
7752.67	6649.00	7.000	8.500	7"	

#### **Formations**

MD ft	TVD ft	Formations	Lithology	Dip Angle deg	Dip Direction deg
6560.46	5559.00	Twin Creek		0.00	0.00
6997.69	5927.00	NVJ01		0.00	0.00
7205.66	6117.00	HGRZ		0.00	0.00
7541.72	6440.00	OWC		0.00	0.00



MAVA

### P:2

# STATE OF UTAH DEPARTMENT OF NATURAL RESOURCES DIVISION OF OIL, GAS AND MINING

				FORM				
erator:	Wolver	ine Gas and Oil Compa	iny of Utah, LLC	_ Ope	ator Ac	count Nu	ımber: <u>N</u>	1655
dress:	55 Can	npau NW, One Riverfro	nt Pleze	_				
	city Gr	and Rapids		_				455 4450
	state N		zip 49503-2616	_	P	hone Nu	mber: <u>(6</u>	16) 458-1150
Vell 1						· _ · · ·		
API Nun	nber	Well	Name	QQ	Sec_	Twp	Rng	County
430413	0033	Wolverine Federal 19	<del>}-</del> 1	NENE	19	23\$	1W	Sevier
Action C	Code	Current Entity Number	New Entity Number	s	pud Da	te .	Ef	ly Assignment Tective Date
R		99999	13995	T -	30/200	5	1 7	-6-05

County QQ Sec TWP Rng Well Name **API Number Entity Assignment** Spud Date **New Entity Current Entity Action Code Effective Date** Number Number Comments:

API Number	Well	Vame	QQ	Sec	Twp	Rng	County
Action Code	Current Entity Number	New Entity Number		Spud Da	te	Ent E	tty Assignment ffective Date
Comments:			Ī	· · · · · · · · · · · · · · · · · · ·			RECEIVE
-							IUL 0 5 200

### ACTION CODES:

- A Establish new entity for new well (single well only)
- B Add new well to existing entity (group or unit well)
- C Re-assign well from one existing entity to another existing entity
- Re-assign well from one existing entity to a new entity
- E Other (Explain in 'comments' section)

Steven R. Hesh - EXAC	T Engineering Inc
tome Please Plant	sh
Mgnature Consulting Engineer	7/3/2005
Title	Date

(5/2000)

415 S. Boston Ave., Suite 734, Tulsa, OK 74103 • (918) 599-9400 • (918) 599-9401 (fax)

Steven R. Hash, P.E. Registered Professional Engineer stevehash@exactengineering.com

## CONFIDENTIAL PLEASE!

July 3, 2005

Mr. Dustin Doucet Utah Division of Oil, Gas & Mining 1594 West North Temple, Suite 1210 Salt Lake City, UT 84114-5801

Re:

Wolverine Federal 19-1 well Sec 17 T23S R01W Sevier Co., UT API# 43-041-30033

Dear Mr. Doucet,

On behalf of Wolverine Gas and Oil Company of Utah, LLC, please find enclosed daily drilling reports for the subject well from June 25, 2005 through July 2, 2005. The well spud at 9:00 am on June 30, 2005 and we are presently drilling at 1200'. We respectfully request that the enclosed information remain confidential.

Very Truly Yours,

Consulting Engineer for Wolverine Gas and Oil Company of Utah, LLC

copy without enclosures via email to:

Wolverine Gas & Oil Co of Utah, LLC: Helene Bardolph

**EXACT Engineering, Inc.** 

well file

RECEIVED JUL 0 8 2005

DIV. OF OIL, GAS & MINING

		Engir	eering	& Sup	pervisio	>n		Y	(AC	ΤE	ng	ine	erir	ng, Inc.		-		.6	)18) 5:	99-940	0		
Opera	tor:	Wolverin	680 C	o of Uta	h, LLC			AIL	<u> Y [</u>	)R	ILL	IN		REPO					nidnig	ht to mi	_	nt _	
	02/05		lverine F			CONTR	U		Rig #11	11				NTY, STATE vier, UT	SPUD DATE	43-0	<sup>AP#</sup> 041-3		3	SUPERV	/isor G Ui	rban	
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							<u> </u>	IYDE	RAULI	cs	<u> </u>	_						$\exists$		SLOW	VPUI	#P	
PUMP NO.	MANU	FACTURER	LINER	STROKE	1	SPM	GP	*M	AV DP	AV		PUMP	1	MTR DIFF PRESS.	1484	P/N²	EC	:D	F	67 spm	76 s	pm 1	100 spm
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**EXACT Engineering, Inc.** 

www.exactengineering.com

415 S. Boston Ave., Suite 734, Tulsa, OK 74103 • (918) 599-9400 • (918) 599-9401 (fax)

Steven R. Hash, P.E. Registered Professional Engineer stevehash@exactengineering.com

## CONFIDENTIAL PLEASE!

July 17, 2005

Mr. Dustin Doucet Utah Division of Oil, Gas & Mining 1594 West North Temple, Suite 1210 Salt Lake City, UT 84114-5801

Re:

Wolverine Federal 19-1 well Sec 17 T23S R01W

Sevier Co., UT API# 43-041-30033

Dear Mr. Doucet,

On behalf of Wolverine Gas and Oil Company of Utah, LLC, please find enclosed daily drilling reports for the subject well from July 3, 2005 through July 16, 2005. 13-3/8" surface casing was set at 2448' & cemented to surface on July 15. The BOP stack was nippled up and tested and we are presently preparing to drill out 12-1/4". We respectfully request that the enclosed information remain confidential.

Very Truly Yours.

Steven R. Hash

Consulting Engineer for Wolverine Gas and Oil Company of Utah, LLC

copy without enclosures via email to:

Wolverine Gas & Oil Co of Utah, LLC: Helene Bardolph

EXACT Engineering, Inc.

well file

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	al BH		HA WT.	PUWT	.00	SO WT.	ROT. TO	ORQUE	GRO	. ELEVAT	ION	GL TO	КВ		KB ELEVA	TION	INTERMEDIA	ATE CS	G		perate /		CASING	$\dashv$
										5,839	[	17			5,856	3				13 3/8	@ 2448			$\Box$
MC		INCL.	AZIMUTH	TVD	SECTION	N+/S-	E+/W	- DI	e I	TOOL	М	SUR	VEYS	_	AZIMUTH		VD	CECT	on I	N: (5	F	51.0	700	
MIL		NVCL.	AZIMOTTI	140	SECTION	14773-	E+7.W	-		MWD	WIL	- "	VCL.		ZIMOTH		VD	SECTI	ION	N+ / S-	E+/W-	DLS	MW	_
										MWD													MW	/D
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0:0	-	1:00	1.00			· Hallib	urton	cem	ente	ers														$\dashv$
1:0	0 (	6:00	5.00	R/I	) Con	ducter	and c				asin	g.												
6:0	_	9:30	3.50			well he																		_]
9:3 20:0		0:00	10.50 4.00			BOPE		elly	alve	a dart	Val	ve ni	ne r	ame	hlind ra	me HCD	l valve, kil	Lline		lves l	OW 250	) hiah	5000	
20.0	<del>''</del>	0.00	7.00			500 psi					vai	το, μη	PO 10	J1110	, Dilliu Ic	anio HON	valve, Kil	11116	, va	1469	UVV 200	riigii	3000	4
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			Engir	eering	& Sup	ervisio	on		EX	AC	ΤΕ	ngi	nee	rir	ng, Inc	•			(9	18)	599	-9400		
Оре	rator:	· W	olverine	G&O Co	of Utah	, LLC		D/	AIL'	Y D	RII	LLI	NG	R	EPOF	RT		24 hr:	s - n	nidn	ight	to mid	Inight	
DATE		- 1	VELL			40.4	CONTRA		IA EDI:-	. шаа					TY, STATE	SPUD DATE	42.0	API#	000			SUPERVIS		
	7/15/C F/ SPUD			Verine F					nit Rig			ROGR		Sevi	ier, UT DRILLI	6/30/05 NG TIME	43-0 ROP	41-3		MATIO	N I		orge Ui	ban
	16			Pump t	op out	cemen	t		2,4	48							#VALUI	E!	Α	Arapi	ear	1	7750	md
	\4/T		V/IC	14/1	1 /	ж Т я	н Г	SAND		SOLIDS	_	MUD	DAT.		GELS	DEPTH	DATE/TIME	CHI	ORID	FC T	Ć.	LCIUM	мвт	% LCM
	0.0	1	vis. 37	n/c			.0	0.50		8.00		6	1 2	<del></del>	13/20	2353	7/15/08:00		5,00			840	МВІ	20
		1								_		BIT	DATA	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \										
BIT NO.	SIZE	MF	3.	TYPE	IADC CODE	SERIAL	NO.	JE	OF TEA	nd")		!N	OL	JŤ	FOOTAGE	HOURS	ROP		MTR	RPI RT+M		WOB	DULL C	ONDITION G
$\vdash$	17.500	тн	c x	14-09	OODL	6020	85	28	28	2	8	2290	24	48	158	63.50	2.5		Υ	30-1	-+	40		Ť
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1		Natio	nal	6"	8.5	2.96	102	30	00				800		100					1				
2		Natio	nal	6"	8.5	2.96	102	30	00										.	2	4			
3	L_	Natio		6"	8.5	2.96	102	30	00										l	3	l			
BO	ттомно	LE ASS		RILL ST		Q.D.	l.D		FOR	MATION	v T	М	D I	G	TVD		LITHOL	OGY		H	_		AL INFO	2
17 1	/2 BIT				.50				Ara	piear	1									Rig	No	-	Unit 11	1
Dire	ctional	assm	bly	125	.00				Twir	Cree	ek									Cell	Nor	ren	918-6	45-6671
66	5/8 HW	VDP		180	.00				Na	avajo					GAS DATA				_	<b></b>		P Test		
	" SWE	)P		545			<u> </u>	_	вотто	MS UP T	TIME	BG (	SAS		CONN	SAS	TRIP	AS		$\vdash$		OP Test		7/40
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43	HVVDF			120	.00				GAS	UNITS	+	FRO	ЭМ :		ТО		ROP (F1	/HR)		-			ipe Rar	
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	al BH/			1,003			egrece Gjarani										INTERMEDIA	. T.F. A.A				erate A		CASING
	ING WT. 105	1	89	PU WT		so wт. 95	ROT. TO 204	_		LEVATI	ION	GL TO			KB ELEVA 5,85		INTERMEDIA	ATE CS	.6	<del>-</del>	_	120'		@ 2500
				120	L					,000			VEYS	3					1					
М	)   1	NCL.	AZIMUTH	TVD	SECTION	N+/S-	E+/W-	DI	.S 1	OOL	MD		INCL.		AZIMUTH	ΙΤ	VD	SECT	ION	N+ /	S-	E+/W-	DLS	TOOL
2,3			232.90	2189	630	-365	-514	2.5	-+-	IWD		-	-						$\dashv$		-			MWD
2,3	80   39	9.00	232.90	2240	670	-389	-546	2.	50   N	WD	<u> </u>			Trees.		 								MWD
FRO	м			LAST	24 HOUR	S:					DA	AILY A	ACTIV	/}   Y	***									
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1:3		:30	1.00			onditio		ıp sı	weep										<u>-</u>					
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8:0 14:		4:30 7:30	6.50 3.00			i 55 jts ig. Rig				S/O (	,si ig	. <u>se</u>	. <u>w</u> 2	.44	<u>.                                    </u>									
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Dai	ly Tota	,	24.00	ļ																				
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		,	Engi	neering	& Su	pervisi	on		E	EXA	СТ	En	gir	nee	rir	ıg, Inc				(9	18) 5	99-940	0		
Ope	rato	r: V	Volverin	e G&O C	of Uta	h, LLC		_ [	)A	ILY	DI	RIL	LII	NG	R	EPOR	RT		24 hr:	s - r	nidnig	ht to m	idni	ght	
DATE			WELL				CON	TRACTO								TY, STATE	SPUD DATE		API#			SUPER			
	7/14/ F/ SPL			IVERINE F			<u> </u>	Т		t Rig #	#111		OGRES		Sev	ier, UT	6/30/05 NG TIME	43-0 ROP	41-3		MATION			ge Ur	ban
	15		ν	Viper trij	o f/suri	face cs	ng.			2,448	3		19	90		19	.00	10.0		A	Arapie	an	7	750	nd
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	wт 0.0	+	vis. 37	n/c			<del>РН</del> 3.0		50	+	LIDS % 3.00	+	PV 6	2 2	_	GELS 13/20	2353	7/14/08:00	_	.ORID		CALCIUM 1840	МВ	T '	% LCM 20
Ë	0.0		31	1 1//0		732   (	3.0	0.	30	T	5.00		SIT D			13/20	2353	177 14706.00	J.	3,00	<u> </u>	1040		<u> </u>	20
BIT	SIZE	MF	FG.	TYPE	IADC	SERIAL	NO.			(1/32nd*)	)	T	IN	OL	_	FOOTAGE	HOURS	ROP		MTR	RPM	WOB			NDITION
NO.	17.50	00 H	TC 2	<b>K14-09</b>	CODE	6020	85	28	Т	r TFA	28	1 2	290	24	48	158	63.50	2.5		Υ	30-12	+	T	В	G
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But			OTUBER	Lusies	077000	Jan tar	K SP			DRAU				T				P / IN <sup>2</sup>				_		UMP	400
PUN NO		MANUFA	CTURER	LINER	LENGTH	GAL / STI	\SP	M	GPM	AVE		AV DC	1	JMP ESS.		MTR DIFF PRESS.	нн	F / IIV	EC	٥		or spi	11 /6	spm	100 spm
_1		Nati	onal	6"	8.5	2.96	10	2	300				80	00		100					1		$\perp$		
2	-		ional	6"	8.5	2.96	10	-+	300	<u> </u>			₩							_	2	-	4		
3		Nati	ional	6"	8.5	2.96	10	2	300		L		<u> </u>				]				3				
ВО	ТОМН	OLE AS		RILL ST		O.D.	1	I.D.	╁	FORMA	TION	1	MD		G	EOLOGIC TVD		LITHOL	OGY			GENE	IG INF		<u>`</u>
17 1	/2 BI	Τ		1	.50					Arapi	ean										Rig N	lo	Un	nit 111	
		al assr	nbly	<del> </del>	5.00		<u> </u>		4	Twin C	reek	<u> </u>		_							Cell I	Norren	9	918-6	5-6671
_		WDP			0.00		┼		-  -	Nava						GAS DATA		L		_		3OP Te			
18 5 Јаг	SW	DP			2.00		<del> </del>		B(	OTTOMS	UP TIK	NE	BG GA	S		CONNG	GAS	TRIPG	SAS			BOP Te Safety M		-	7/13
4 5"	HWD	)P			0.00		T		┲	GASU	NITS		FROM			SHOWS		ROP (FT	7HR)			30P Dr		ng	-//13
																		1,07,17,	,			Operate		e Rar	
				ļ <u>.</u>																	Last	Operate	Blin	d Rai	
	al Bh		HA WT.	1,003		SO WT.	ROT.	TORQU	JE G	RD, ELEY	VATIO	N O	GL TO F	кв		KB ELEVA	TION	INTERMEDIA	ATE CS	G		Operate CASING		ular	ASING
	05		89	120		95	+	200		5,83			17			5,856						@ 120'	_		@ 2500
												5	URV	/EYS	5										
ME		INCL. 37.40	232.90	<b></b>	SECTION 630	-365	E+/	_	DLS 2.50	MW		MD	INC	CL.		AZIMUTH	<u></u>	VD	SECT	ION	N+/S	E+/W	+	DLS	TOOL MWD
2,3	<del></del>		232.90		670	-389	-54		2.50	MW			+-							$\dashv$		<del>                                     </del>	+-		MWD
	-					1 000	1					DAII	LYA	CTIV	/ITY	,	1			<u>-</u>				!	
FRO					24 HOUR		200																		
0:0	_	4:30	14.50			rvey 2	290	to 24	415																
14:0 15:0		5:00 9:30	0.50 4.50		j servi II & su	rvey 2	415	to 24	448		- <del></del> .														
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21:0	_	0:00	3.00	Wi	per tri	p, trip o	out g	ood	. Hit	bridg	je 14	490,	Kell	ly up	o re	am.									
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			, Engir	neering	& Su	ervisio	on		Ε	XAC	T E	Ξης	gine	eer	ing, Inc	<b>;.</b>			(9	18) 59	9-9400		
Op	erato	r: \	Volverin	e G&O Co	of Utal	ı, LLC		D	Al	LYI	DR	ILL	_IN	G	REPO	RT		24 hrs	: - m	nidnigh	t to mic	Inight	
DATE			WELL				CONTR			"A					UNTY, STATE	SPUD DATE	42.0	API#	200		SUPERVI		
	7/13 F/ SPI			Verine F			<u></u>		UNIT	Rig #1	11	PRO	GRESS		evier, UT	6/30/05 ING TIME	43-0 ROP	41-30		MATION		DL Nayl	or
	14				Drilling	]			2	,290			200	0	23	3.50	8.5		Α	rapiea	n	7750	md
				1 1411		air I i		SAN	·D	SOLIE	NO 8/	MU P	JD D/	ATA YP	GELS	DEPTH	DATE/TIME	CHI	ORIDE	:	ALCIUM	мвт	% LCM
	wt 9.6	+	vis. 36	n/c	<del></del>		эн 5.0	0.5		8.0		4	-	24	12/19	2138	7/13/08:00		,000		1600	WiBT	20
												В	T DA										
BIT NO.	SIZE	M	FG.	TYPÉ	IADC CODE	SERIAL	NO.			1/32nd") TFA		ll ll	<b>1</b>	OUT	FOOTAGE	HOURS	ROP		MTR	RPM RT+MTR	WOB	T B	G
3	17.50	00 н	TC >	(14-09		6020	85	28	2	8	28	22	90		345	44.50	7.8		Y	30-120	40		
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Н						ļ			+	-		$\vdash$	+				#DIV/0 #DIV/0		$\dashv$				
					l	I			HYE	RAUL	ICS	<u> </u>				1	1		$\overrightarrow{1}$		SLOW	/ PUMP	
PU		MANUF	ACTURER	LINER		GAL / STH	SPM	1 (	GPM	AV DP		/ DC	PUM		MTR DIFF	нн	P / IN²	ECI	₽		67 spm	76 spm	100 spm
N.	-	Nat	ional	6"	LENGTH	2.96	102	,   -	300				PRES 800	-	PRESS.	+			┪	1			
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				RILL ST		O.D.		.D.		FORMATI	ON		MD		GEOLOGI		LITHOL	ńgy			GENER	AL INF	0
	1/2 B		SEMBLY	LENG1	1.50	0.0.	, , , , , , , , , , , , , , , , , , ,	.0.	╌	Arapie		<del>                                     </del>	MID			<u>-</u>	Limbe			Rig No		Unit 11	1
Dire	ction	al ass	mbly		5.00				T	win Cr	eek									Cell No			45-6671
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18 : Jar	5" SV	VDP		<del> </del>	5.00 2.00		ļ		ВО	TOMS U	TIME	В	G GAS		CONN	GAS	TRIP	SAS			afety Me		7/13
$\vdash$	HWI	DP			0.00				⊭	GAS UNI	TS	1	FROM		SHOWS	· · · · ·	ROP (F	/HR)			OP Drill		
												_									perate F		
Ļ						1 75.00		5. 75 858				<del> </del>		+			ļ				perate l		
	tal B		BHA WT.	1,003		SO WT.	ROT. 1	ORQU	E GF	D. ELEV	ATION	G	L TO KE	В	KB ELEV	ATION	INTERMEDI	ATE CS	G	LAST	CASING	NEXT	CASING
L	105		89	120		95	2	00		5,839		<u> </u>	17		5,8	56			_	20" @	0) 120'	13.375	@ 2500
Ę	D I	INCL.	AZIMUTH	TVD	SECTION	N+/S-	E+/V	v. T	DLS	TOOL	1 ,	SI MD	JRVE	_	AZIMUTH	T	TVD	SECT	ION	N+/S-	E+/W-	DLS	TOOL
Λ_		32.90		<del></del>	521	-299	-42	$\neg$	3.00	MWE	$\neg$												MWD
2,2	21	35.10	232.40	2113	575	-331	-470	0 2	2.30	MWE						1					<u></u>	<u> </u>	MWD
FR	ou T			1 148	T 24 HOUF	9					ſ	DAIL	YAC	TIV	TY								
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12	:00	0:00	12.00	Dr	ill & su	ırvey 2	163 t	to 22	290														
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Ĕ	y 1	Jul	1 24.00									CC	STL	DAT	A								

	. <i>E</i>	Engin	eering	& Sup	ervisio	on		EX	(AC	T	Εnç	gine	eri	ing, Inc	<b>.</b>			(9 <sup>-</sup>	18) 59	9-9400		
Operator:	Wol	lverine	G&O Co	of Utah	, LLC		D.	AIL	1 Y.	R	ILl	_IN	GΙ	REPO	RT	2	24 hrs	- n	nidnigl	nt to mi	dnight	
DATE	- 1	ELL				CONTRA								INTY, STATE	SPUD DATE		API#			SUPERVI		
07/12/05 DAYS F/ SPUD				ederal		L		Jnit R	lig #1 тн	11	PRO	GRESS	Se	vier, UT	6/30/05 ING TIME	43-0- ROP			AATION		DL Nay	
13				Drilling	<u> </u>			2,	090			145	5	21	.00	6.9			rapiea	1	7750	
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9.4	3		m/c	<del></del>		эн . О	SAND	-+-	SOLID		P	_	YP	GELS	DEPTH	DATE/TIME	CHLC			ALCIUM	мвт	% LCM
9.4		0	TI/C		32   8	3.0	0.50		6.7	5	6	T DA	20	11/19	1976	7/12/08:00	18	,000	<u>,                                    </u>	1560		35
BIT SIZE	MFG.	1	TYPE	IADC	SERIAL	NO.	J	ETS (1/3			Bi		OUT	FOOTAGE	HOURS	ROP	1	MTR	RPM	WOB	DULL C	ONDITION
3 17.500	нтс	+	14-09	CODE	6020	05	28	or T.F.		20	40	45		145	24.00		$\dashv$	$\dashv$	RT+MTR	40	ТВ	G
3 17.500	1 110	+-	14-09		0020	00	20	28	<del>'   '</del>	28	194	45		145	21.00	6.9 #DIV/0!	$\dashv$	Y	30-120	40	<del>                                     </del>	
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								HYDF	RAULI	CS								T		SLOW	/ PUMP	
PUMP MAI	NUFACT	URER	LINER	STROKE	GAL / STK	SPM	G	РМ	AV DP	AV	DC	PUMF PRES		MTR DIFF	нн	2 / IN <sup>2</sup>	ECC	7		67 spm	76 spm	100 spm
	Nation	nal	6"	8.5	2.96	102	30	00		$\vdash$		800	_	PRESS.				┪	 1			
-	Nation		6"	8.5	2.96	102	+	00		1			$\top$					┪	2			
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Directional a	assmb	ly	125						in Cre				+						Cell No			' 645-6671
6 6 5/8 HWI	DP		180	.00					Vavajo											OP Test		
18 5" SWDF	Р		545	.00		ļ		BOT 10	OMS UP	TIME	В	G GAS	<b>T</b>	GAS DATA CONN C	SAS	TRIP G	AS	$\exists$	Next E	OP Tes	t	
Jar				.00				<u> </u>			L			SHOWS			<u>.</u>			afety Me	eting	7/11
4 5" HWDP			120	0.00				G/	AS UNIT	S	F	ROM	+-	ТО		ROP (FT/	HR)	—⊪		OP Drill		<del></del>
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Total BHA:	:		1,003	.50	Set Fuel								+-							perate A		
STRING WT.	ВНА		PU WT		O WT.	ROT. TO			ELEVAT	ION		то кв	#	KB ELEVA		INTERMEDIA	TE CSG		LAST	CASING	NEXT	CASING
94	89	9	100		90	15	3		5,839			17		5,850	6				20" @	0 120'	13.375	@ 2500
MD INC	CL. AZ	MUTH	TVD	SECTION	N+/S-	E+/W-	DI	LS	TOOL	l M	SU ID	INCL.	YS 	AZIMUTH	Т	VD	SECTION	] ис	N+/S-	E+/W-	DLS	TOOL
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		Engi	neering	& Su	ıpervi	sion		E	XAC	TE	≣ng	inec	rir	ng, Inc				(	918) 5	99-940	0		
Opera	itor:	Wolverin	e G&O C	o of Ut	ah, LLC	;		DA	ILY [	DR	ILL	INC	) F	REPO	RT	'	24 hı			ht to m		ght	
DATE 07/	11/05	WELL	lverine l	Endor	110.1	СО	NTRAC		D:~ #4	44		- 1		ITY, STATE	SPUD DATE		API#	ŧ		SUPER	/ISOR		
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вотто	MHOLE A	SSEMBLY	LENGT		O.D.	<b>T</b>	t.D.	1	FORMATIC	N	N	иD		TVD		LITHOL	OGY			GENE	KAL S INFO		
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мD 1,747	INCL.	236.60		348	N N+/:	$\rightarrow$		DLS 4.00	TOOL MWD	М	D	INCL.	,	AZIMUTH	т	VD	SECT	ION	N+ / S-	E+/W-	DL	.s	TOOL
¥		237.80			+	_				_	_							$\dashv$				$\dashv$	MWD MWD
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Ор	erato	or: W	olverine	G&O C	of Utal	n, LLC		D	AIL	.Y D	RI	LL			REPOR		2			midni	ght to m	_	
DATE	7/10		WELL Wolv	erine F	ederal	19-1	CONTRA			Rig #11	11		l.		ity STATE	6/30/05	43-0	аРі# 41-3		33	SUPER	risor DL Nay	ılor
	F/ SP	QU		OPERATI	ONS @ M	IDNIGHT	L		AL DEF	тн		PROG			DRILLI	NG TIME	80P 3.0		FOR	MATION	AU	ітн. DEPTI 7750	+
_	11				Drilling			<u> </u>		890		MU	D DA	ΓA		.50	3.0		L	Arapie	an	7750	ina
	WT	<b>T</b>	VIS.	WL			Н	SANI	·	SOLIDS		PV		ΥP	GELS	DEPTH	DATE/TIME		LORID	_	CALCIUM	мвт	% LCM
_	8.9		48	n/c	1	/32   8	.0	tr	<u></u> L	3.75	5	7 Br	DAT	23 <b>A</b>	15/27	1841	7/10/08:00	9	000,0	0	1280		35
ВІТ	SIZE	E MF	G.	TYPE	IADC	SERIAL	NO.	J	ETS (1/			IN		OUT	FOOTAGE	HOURS	ROP		MTR	RPM RT+MT	WOB	DULL C	ONDITION
NO. 2	17.5	00 S	TC N	/G55	CODE	MJ38	20	28	or TF	-	28	168	30		210	49.50	4.2		Υ	30-12	+	1 1 8	, G
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$\vdash$					<u> </u>	<u> </u>			HYD	RAULI	l				<u> </u>	<u> </u>	#51070					W PUMI	5
PUI		MANUFA	CTURER	LINER		GAL / STK	SPM		РМ	AV DP	AV	- 1	PUMP		MTR DIFF	НН	P / IN²	EC	D	F			100 spm
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BC	TTOM	HOLE AS		RILL ST		O.D.	1.0	).	F	ORMATIO	n I		MD	( 	GEOLOGIC TVD		LITHOL	OGY				RAL INI G INFO	Ō
	/2 B				1.50	<u></u>			<b>II</b> —−	rapiea										Rig I	10	Unit 1	11
-		nal ass	mbly		5.00				<b>II</b>	vin Cre				-			<u> </u>		$\dashv$	$\vdash$	Norren		645-6671 T
		HWDP NDP			0.00 5.00				<b> </b>	Navajo roмs ur	•	DC:	GAS		GAS DATA CONN (	248	TRIP G	:45			BOP Te		
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L									<b> </b>					-					_	-	Operate Operate		
To	tal B	HA:		1,003	3.50					-	$\dashv$						<del> </del>			Last	Operate	Annula	r
STF	ING W	VT. B	HA WT.	PU W		50 WT.	ROT. TO		GRE	5,839	TION		то кв 17		KB ELEV/ 5,85		INTERMEDI	ATE C	SG		7 CASING @ 120'	_	CASING 5 @ 2500
_	94		89	100	<u>'                                     </u>	90	1 10		<u> </u>	5,639			RVEY	<u>'</u>	0,00		<u> </u>		_		<u>@ 120</u>	10.07	<u> </u>
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	10			Drillir	ng				1,820		11118	1		0	.50	2.0		<u></u>	Arapie	an	77	<b>7</b> 50	md
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3_	<u> </u>	ational	6"	8.5	2.96	102	<u> </u>	<u></u>									3				
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		ASSEMBLI		$\rightarrow$	O.D.	1.D.			-+	MD	+	<u> </u>	VD	LITHOL	.OGY	$\dashv$	5: 1				
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6 6 5/8	8 HWD	Р	180	0.00										<u> </u>		$\exists$				<u>0-0-</u>	+3-0071
18 5"	SWDP		545	5.00			BO	TTOMS UP	TIME	BG GA	S			TRIP	GAS	$\exists$				_	
Control   Cont		7/3																			
4 5" H	WDP		120	0.00		<u> </u>	_ =	GAS UNITS	S	FROM	1		0	ROP (F	I/HR)					_	
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Daily T	otal	24.00																			—

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Op	erato	or: W	/olverin	e G&O Co	o of Uta	h, LLC		DA	AILY	' D	RII	LLI	ING	F	REPOR	RT		24 hr	'S - I	midni	ght to n	idnig	ht	
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	7				Drilling	<b>g</b>			1,81	9			39		6.	50	6.0		1	Arapie	an	77	50 ı	nd
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		+	VIG.	***	+			SAND		OLIDS	76	PV	+ '	11	GELS	DEPTH	DATE/TIME	CHI	LORIL	ES	CALCIUM	мвт	SA	LT PPM
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BIT NO.	SIZE	MONOPACTURER   LINER   STROKE   GAL 150   STROKE																						
1	17.5																							
2	STC   MFG   TYPE   MDC   SERIAL NO.   JETS (1/32/147)   N																							
H					<u> </u>	<u> </u>			VBBA				<u> </u>				#DIV/0	)!	Щ					
PU	ИP	MANUFA	CTURER	LINER	STROKE	GAL / STK	SPM					СГР	PUMP	Γ	MTR DIFF	[ нн	P / IN²	EC	CD.	-				100 spm
NC	Vis.   Vis.																							
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3		STEE   MFG																						
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	MELL   Modernine Federarial 19-1   Unit Right   Mills   Modernine Federarial 19-1   Unit Right   Mills   Mil																							
Jar	VIS.														7/3									
4 5"																								
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	94		89	100		90	150		5,8	39		17	7		5,856	3				20"	@ 120'	13.3	75	@ 2500
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I I	17.500   STC   XRVC   MR5481   28   28   28   137   1680   1543   98.50   15.7   Y   30-120   40   6   6   1   17.500   STC   MG55   MJ3820   28   28   28   1680   1819   139   26.00   5.3   Y   30-120   28   28   2   1680   1819   139   26.00   5.3   Y   30-120   28   2   2   2   2   2   2   2   2																							
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	erato	or:	Wolverin	e G&O C	o of Uta	h, LLC				.Y [	DRI	ILI	LIN		REPO			24 hı	rs -	midniç	ght to m	ıidnig	ht	
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BIT NO.	SIZE	۱ ۱	AFG.	TYPE	IADC CODE	SERIAL	NO.	Ji	ETS (1/3 or TF.				N	OUT	FOOTAGE	HOURS	ROP		MTR	RPM RT+MTF	WOB		B B	NDITION G
1	17.50	_		KRVC	<u> </u>	MR54		28	28	$\overline{}$	28			1680		98.50	15.7		Υ	30-12	0 40	+	6	1
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				RILL ST	RING										GEOLOGIC	<u></u>		<u> </u>	_		GENE	ZAL IN	FO	
	ттомн /2 ВГ		SSEMBLY	LENGT	.50	O.D.	I.D.			RMATIO	_		MD	7	TVD		LITHOL	.OGY				SINFO		
			mbly		5.00					apieai n Crei	_			┪					$\dashv$	Rig No Cell N		Unit 1		5-6671
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	J-T		03	100		90	150	<u>, 1</u>		,839			17 JRVE	<u> </u>	5,856	3				20" (	<u>)</u> 120'	13.37	′5 (c	2500
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	rator:			e G&O C	o of Utal	ı, LLC				ΥD	RII	_LII			REPO	RT		24 h	rs -	midnig	ght to	mid	Inigh	:
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	мт 9.6	-	⁄is. 34	WL			эн	SAND		SOLIDS		PV	_	/P	GELS	DEPTH	DATE/TIME		LORI		CALCIL		ивт	SALT PPM
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BIT NO.	SIZE	MFC	G.	TYPE	IADC	SERIAL	NO.	JI	ETS (1/32 or TFA			IN		UT	FOOTAGE	HOURS	ROP		MTR		W	ОВ		CONDITION
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PUM	- 1	NUFAC	TURER	LINER	STROKE	GAL / STK	SPM	_		V DP	AV DO	PU	IMP	٨	MTR DIFF	нн	P / IN²	E	CD			_		100 spm
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	томно 2 ВІТ	LE ASSI	EMBLY	LENGT	1.50	O.D.	I.D.			MATION piear		MD	-		TVD		LITHOLO	DGY		Rig N	0	RIG II	Jnit 1	11
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	)4	3	39	100		90	150	)	5,	839		17			5,856	3				20" (	@ 120	0' 1	3.37	@ 2500
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Daily	Total	2	4.00																					

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## **EXACT Engineering. Inc.**

www.exactongineering.com

415 S. Boston Ave., Suite 734, Tulsa, OK 74103 • (918) 599-9400 • (918) 599-9401 (fax)

Steven R. Hash, P.E. Registered Professional Engineer stevehash@exactengineering.com

### CONFIDENTIAL PLEASE!

August 1 2005

Mr. Dustin Doucet Utah Division of Oil, Gas & Mining 1594 West North Temple, Suite 1210 Salt Lake City, UT 84114-5801

Re:

Wolverine Federal 19-1 well

Sec 17 T23S R01W Sevier Co., UT API# 43-041-30033

AUG 0 4 2005

DIV OF DIL GAS & MINING

Dear Mr. Doucet.

On behalf of Wolverine Gas and Oil Company of Utah, LLC, please find enclosed daily drilling reports for the subject well from July 17, 2005 through July 31, 2005. We are presently running 9-5/8" protective casing at 7044' and expect to reach total depth within the next week. We respectfully request that the enclosed information remain confidential.

Very Truly Yours,

Consulting Engineer for Wolverine Gas and Oil Company of Utah, LLC

copy without enclosures via email to:

Wolverine Gas & Oil Co of Utah. LLC: Helene Bardolph

EXACT Engineering, Inc.

well file

Petroleum Engineering Consulting, Personnel & Johsite Supervision

complete well design, construction & management, drilling, completion, production, pipelines, appraisals, due diligence, acquisitions, procedures, temporary personnel and field supervision

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Jar			32	.00						3-12		SHOWS						OP Drill		7/26
4 5" HWD	DP		120	.00			_#	GAS UNIT	5	FROM	Ŧ	10		ROP (FT	/HR)	-		perate I		
Casing ro			37	.97										ļ		┩┈─		perate I		
											_+			<del> </del>				perate /		
Total Bh			865 PU WT		SO WT.	ROT. TO	ROUE	GRD. ELEVA	TION	GL TO F	(B	KB ELEV	ATION	INTERMEDI	ATE CSG		AST (	ASING	NE	XT CASING
STRING W	WT.   -1	89	275		160	379		5,839		17		5,85	56	1		13	3/8	@ 2448	<u> </u>	
									S	URVE	YS								1 516	TOOL
MD	INCL.	AZIMUTH	TVD	SECTION	N+/S-	E+/W-	DLS	TOOL	MD	IN	CL.	AZIMUTH		TVD	SECTIO	N N+	/ S-	E+/W-	DLS	MWI
6.546	25.40	227.30	5466	3282		-2615			<del></del>	-	_+-		<del> </del>			+			1	MWI
6,640	######	229.70	5551	3321	-2010	-2644	2.20	0 MWD	<u> </u>						<u> </u>		_			
									DAIL	YAC	ΤΙΖΙΤ	<u> </u>								
FROM				24 HOUF				4												
0:00	4:30	4.50			oit to ma		an o	ut run												
4:30	9:30	5.00			090 to															
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10:30	11:30	1.00			or direc		288													
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	0:00	2.50	Dri	ill & si	urvey 6	540 to	6603	3												
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	•	En	gine	ering &	& Sup	ervis	ion	-	E	EXA	СТ	Eı	ngir	neer	inç	g, Inc.				(91	8) 599	-9400			
				G&O Co					DA	JLY	'D	RI	LLI	NG	R	<b>EPOF</b>	₹T		24 hr:	s - r	nidnigh	t to mid	dnight		
Oper	ator:	IWELL		GaU CO	OI Otal	, LLC	CO	NTRAC	TOR					С	OUNT	Y, STATE	SPUD DATE	<u> </u>	AP#			SUPERVI			
	/28/05			erine F	ederal	19-1			Un	it Rig	#11				Sevi	er, UT	6/30/05	43-0	41-3				orge		an
DAYS F/				PERATIO					TOTAL	DEPTH		$\Box$	PROGR				NG TIME	ROP	.		MATION		тн. DEP1 775		d
	29				RIH					6,49	9			0		0.	00	#DIV/0	/1		rapiea		113	J 111	<u> </u>
												_	_	DATA	_	0510	DEPTH	DATE/TIME	CHI	ORID	ES C	ALCIUM	мвт	SALT	Т РРМ
W	/τ	VIS.	$\Box$	WL		CK	PH	+	SAND	-	5.00	-+	PV 6	1	+	GELS 6/10	6499	7/28/08:00	-	5.00		3250			,250
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PUMP	MA	NUFACTUR	ER	LINER	STROKE LENGTH	1	STK S	SPM	GPM	'   <sup>AV</sup>	DP	AV		PUMP RESS.		NTR DIFF PRESS.								亡	
NO. 1	-+	National		-6"	8.5	2.9	6 1	125	370	,   -				1800	_	150					1			$\perp$	
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				LL ST											G	EOLOGIC	;					GENER		FO	_
ВОТ	TOMHOLE	ASSEMBL		LENGT		O.D.		I.D.	士	FORM	ATIO	N	М	D		TVD		LITHOL	OGY				INFO		
12 1/4	bit			1	.50				_	Ara	oiear	n									Rig No		Unit 1		- 667
Directi	ional as	smbly		129	.03				_	Twin		_									Cell No	orren OP Tes		_	5-6671 7/17
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18 5"	SWDP			545			_		-	ЗОТТОМ	S UP	TIME	BG C			CONN	SAS	TRIP	3AS	$\dashv$		afety Me		+	7/26
Jar			$\dashv$		2.00				-				3-		_	SHOWS		L	raue.	$\equiv$		OP Drill		-	7/26
4 5" H			_	120			-		<b> </b> F	GAS	UNITS		FRO	M	_	10		ROP (F	r/RK)	$\dashv$		perate l			7/27
Casing	g rollers	<u> </u>		37	7.97		+		-						-					$\dashv$		perate I			7/27
					. FO				╬			-								$\neg$	<del></del>	perate /	Annula	r	7/27
	BHA:	BHA W	<u>т.</u>	865 PU WT		SO WT	RO	T. TÓR	QUE	GRD. EL	EVAŤ	ION	GL TO	ОКВ		KB ELEVA	TION	INTERMEDI	ATE CS	-		CASING	+-	CT CAS	SING
10	60	89		275		160		375	$\perp$	5,8	839		1	7		5,85	6	<u> </u>			13 3/8	@ 2448	<u> </u>		
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6,444	4 28.	90 22	5.20	5375	3236	-19	51 -2	2581	2.4	-	WD	<b> </b>	+				<del>                                     </del>			_		<del>                                     </del>		-	MWD
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Daily	l Total	24	.00																						
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Control   Cont			E	ngin	eering	& Sup	ervisio	n								g, Inc.				(91	18) 599	9-9400		
Company   Comp	Ope	rator:					···		D	AIL	Y D	RI	LLI	NG	R	EPO	RT		24 hr	<b>s</b> - r	nidnigl			
28	DATE 0	7/27/0	5 W	ELL Wol	verine F	ederal	19-1	CONTRA	U	Jnit R				s		er, UT	6/30/05			3003		G	eorge l	
West   West	DAYS		P	RESENT		_			тот									ŀ						
Windows   Wind	_				WOIR	Stuck	pipe				-100											-		
Second   Personal		wt	V	IS.	WL		СК	РН	SAND	)	SOLIDS	%	PV	+	-+				<del> </del>				MBT	% LCM
Second   Fig.    1	0.0	] 3	3	n/c	2	/32 1	0.2	0.50	)	4.25					7/14	6092	7/26/08:00	13	33,00	00	3140			
S   12,200   Read   MPSSAXEPR   S   P944-93   P44-94   P94   DIT	6175	L NEC		TYPE	IADC:	SERIAL	NO. I	. <u>.</u>	ETS (1/	32nd")	_			ī	FOOTAGE	HOURS	ROP		MTR	RPM	WOB	DULL	CONDITION	
1			<u> </u>	<b>-</b>		CODE	ļ					+		470	+	4000	55.50	10.6		V		45	+	
	-		<del>                                     </del>	+							<del></del>	<del>- +</del>		-			<b></b>			-		+	+++	<u> </u>
National   A	6	12.250	Sec	Et	3X5205	517_	10565	4	24			+	4103	1048	~	1100	04.00		)!	Ħ	00			
Purpose			-	_														#DIV/0	!					<u> </u>
National   6"   8.5   2.96   125   370     1800   150     1									Н	YDR	AULIC	S												
National 6   8.5   2.96   125   370			ANUFACT	URER	LINER		GAL / STH	SPM	GF	PM	AV DP	AV E		- 1			нн	P / IN <sup>2</sup>	EC	<sup>20</sup>	╽┝	68 spm	74 spr	1 /3 spr
National   6"   8.5   2.96   125   370		+	Nation	al	6"		2.96	125	37	70				_							1			
Second Color   Seco					-		2.96	125	37	70											2	200		ļ
12   14 bit	3		Nation	al	6"	8.5	2.96	125	37	70			Ĺ_				<u> </u>					<u> </u>	<u> </u>	
BOTTOMS DEPOSITE   150   1.5	-		-												Gl			LIZUO	OCV.					0
Twin Creek   Navago   Cell Norm   Standard   Navago   Cell Norm   Standard   Cell Norm   Cell			E ASSEM	BLY		<del></del>	O.D.	[] I.D.		<b> </b> -			MD	1		100		Limot	001		Rig No			11
Section   Sect			ssmbly	,		_							****								Cell N	orren	918-	645-667
18 5* SWDP						0				_	Vavajo					GAS DATA				_				_
A5 - HWD	18 5"	SWDF								вотт	OMS UP T	IME					AS	TRIP	AS	$\exists$				+
Casing rollers								<u> </u>										905/5	RJAN	$\exists$				
Total BHA   S85.50   S95.00		•						$\dashv$	- G	AS UNITS	+	FROM	*		10		ROP (F)	/nk)	၂				+	
Total BHA:   SHAWT:   Casin	ig rollei	5		3,	.57		<u> </u>	_	<b> </b>		+									Last O	perate	Blind R	7/27	
180   89   275   160   375   5,839   17   5,856   13 3/8 @ 2448																10 51 51 11	TION	MYEDMEN	ATE CC					
SURVEYS   SURV			<del></del>		<del></del>	-		<del></del>	_	<del></del>		JN		KB				MIERIMEDI	112 00					
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MWD   MWD	MD	IN	CL. A	ZIMUTH	TVD	SECTION	N+/S-	E+/W-	DL			MD	IN	CL.	Ą	ZIMUTH	Ţ	VD	SECT	ION	N+/S-	E+/W-	DLS	
DAILY ACTIVITY	6,44	4 28	.90 2	25.20	5375	3236	-1951	-2581	2.4		——		<del></del>	$\dashv$								<del>                                     </del>	<del>                                     </del>	+
Company   Comp									<u></u>		MWD	DAI		TIVE	V									1
0:00         3:00         3:00         Drill from 6395' to 6499'.           3:00         3:30         0.50         Circ. Sweep half way to surface, stand pipe started leaking bad.           3:30         9:00         5.50         POOH           9:00         9:30         0.50         Lay out top 25' of stand pipe, cut and weld 10' section back in.           9:30         10:30         1.00         Lay down 6 5/8 swdp (6 jts.)           10:30         11:30         1.00         Pull rest of BHA and lay down MWD.           11:30         13:00         1.50         Pick up top stand pipe and reinstall.           13:00         17:00         4.00         Lay down mud motor and bit, pick up new motor, RR# 5 bit, MWD with Gamma.           17:00         20:30         3.50         TIH work tight spot @ 3340' to 3370'           20:30         22:30         2.00         TIH to 5361' work tight spot, trip in to 5936' work through tight spot           22:30         0:00         1.50         Kelly up @5957' wash and ream to 5992', kelly down pull up 3' pulled tight, work pipe & jars.           This am Work stuck pipe @ 5992'/ differential stuck below jars.           Getting ready to spot pipe free.	FROM	и T			LAST	24 HOUR	S:		_			DAI	LYAC	, 11011										
3:30         9:00         5.50         POOH           9:00         9:30         0.50         Lay out top 25' of stand pipe, cut and weld 10' section back in.           9:30         10:30         1.00         Lay down 6 5/8 swdp (6 jts.)           10:30         11:30         1.00         Pull rest of BHA and lay down MWD.           11:30         13:00         1.50         Pick up top stand pipe and reinstall.           13:00         17:00         4.00         Lay down mud motor and bit, pick up new motor, RR# 5 bit, MWD with Gamma.           17:00         20:30         3.50         TIH work tight spot @ 3340' to 3370'           20:30         22:30         2.00         TIH to 5361' work tight spot, trip in to 5936' work through tight spot           22:30         0:00         1.50         Kelly up @5957' wash and ream to 5992', kelly down pull up 3' pulled tight, work pipe & jars.           This am Work stuck pipe @ 5992'/ differential stuck below jars.           Getting ready to spot pipe free.		-	00	3.00																	<del></del>			
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9:30 10:30 1.00 Lay down 6 5/8 swdp (6 jts.)  10:30 11:30 1.00 Pull rest of BHA and lay down MWD.  11:30 13:00 1.50 Pick up top stand pipe and reinstall.  13:00 17:00 4.00 Lay down mud motor and bit, pick up new motor, RR# 5 bit, MWD with Gamma.  17:00 20:30 3.50 TIH work tight spot @ 3340' to 3370'  20:30 22:30 2.00 TIH to 5361' work tight spot, trip in to 5936' work through tight spot  22:30 0:00 1.50 Kelly up @5957' wash and ream to 5992', kelly down pull up 3' pulled tight, work pipe & jars.  This am Work stuck pipe @ 5992'/ differential stuck below jars.  Getting ready to spot pipe free.		_					on 25'	of etan	d ni	ina (	cut an	d w	ıald 1	n' sa	ctic	n back	in							
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11:30 13:00 1.50 Pick up top stand pipe and reinstall.  13:00 17:00 4.00 Lay down mud motor and bit, pick up new motor, RR# 5 bit, MWD with Gamma.  17:00 20:30 3.50 TIH work tight spot @ 3340' to 3370'  20:30 22:30 2.00 TIH to 5361' work tight spot, trip in to 5936' work through tight spot  22:30 0:00 1.50 Kelly up @5957' wash and ream to 5992', kelly down pull up 3' pulled tight, work pipe & jars.  This am Work stuck pipe @ 5992'/ differential stuck below jars.  Getting ready to spot pipe free.					Pul	l rest	of BHA	and la	ay d	own		),												
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This am Work stuck pipe @ 5992'/ differential stuck below jars.  Getting ready to spot pipe free.  CONFIDENTIAL					Kel	ly up	<u>@</u> 5957	' wash	and	d rea	am to	5 <u>9</u> 9:	2', ke	lly do	own	pull up	3' pulled	tight, wo	rk pi	ре	& jars.			
Getting ready to spot pipe free.		1																			-			
Getting ready to spot pipe free.		-			Thi	s am '	Work s	tuck pi	pe (	@ 59	992'/ c	liffer	rentia	l stud	ck b	oelow ja	rs.			<b></b>	71.1			
Daily Total 24.00					Ge	tting r	eady to	spot r	oipe	free	).		_				i	LUNF	IUŁ	<u>H</u> :	HA	L		
Daily Total 24.00		+																						
	Daily	Total	2	4.00																				

		Enc	upervi	sion		E	XAC	T	Eng	gine	eeri	ng, Inc	(918) 599-9400											
Operat	tor:					DAILY DRILLING REPORT 24 hrs - midnight																		
Operator: Wolverine G&O Co of Utah, LLC  DATE WELL CONTRAC								OR					COU	NTY, STATE	SPUD DATE	43-0		003	SUPERVISOR  George Urban					
07/26/05 Wolverine Federal 19-1					— т	Unit	Rig #1	11	PRO	PROGRESS		vier, UT	6/30/05 ING TIME	43-04 ROP	41-3		MATION	<del>را ب</del>	AUTH	TH. DEPTH				
DAYS F/SPUD PRESENT OPERATIONS @ MIDNIGHT  27 Drilling						6,395			42	0	23	.50	17.9		L	Arapie	an		7750 md					
	<u>'</u>										М	ם סנ	ATA								_			
wr		VIS.	WL		СК	РН	+	AND	SOLIC		_	v	YP	GELS	DEPTH	7/26/08:00		3.00		CALCIUM 3140	<del>^  </del>	MBT	% LCM	
10.0		33	n/c		2/32	10.2		.50	4.2	5		6	12	7/14	6092	7726708.00		13,00	JU 1	3170				
		MFG.	TYPE	IAD	c l cen	IAL NO.	_	JETS	(1/32nd")			IT D/	OUT	FOOTAGE	HOURS	ROP	-	MTR	1	wo	В		NOITION	
BIT SI NO.			ITPE	COL	- 1		<u> </u>		TFA		<del> </del>			<del>                                     </del>		10.0		Y	30-12		:	7 B 2 3	G	
5 12.	250	Reed I	P53AKPI	53	7 PB	4483	24	-	<del></del>	24	+	36	4769		55.50	18.6		Y	30/12	_	$\dashv$			
6 12.	250	Sec	EBXS20S	51	7 105	65860	24	1	24	24	47	69		1626	84.50	#DIV/0	1	┢	30/12	<del>\                                    </del>	_	$\top$		
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				<u> </u>			<u></u>		DRAUL	ics	<u> </u>							_		SLC	OW.	PUMP		
PUMP	MAN	UFACTURE	R LINER	STRO	KE GAL/	STK S	БРМ I	GPM	AV DP		V DC	PUA	- 1	MTR DIFF	HI	P/IN <sup>2</sup>	ΕC	D		68 sp	m	74 spm	73 spm	
NO.				LENG		$\perp$			ļ	+		PRE	_	PRESS.	<del> </del> -		<del> </del>			+-	$\dashv$			
1	_	lational	6"	8.5			25	370	<del> </del>	+-		180	JU  -	150					2	200	0			
2		lational	6"	8.5			125 125	370 370	+	+		$\vdash$	+		<del> </del>				3	1	_†		250	
3		lational	6" DRILL S			10	25	3/0		_				GEOLOGI	C			_		GEN	ER/	AL INFO	5	
BOTTO	MHOLE	ASSEMBL			O.D.		I.D.		FORMATI	ON	T.	MD		ŤVΩ	)	LITHOL	QGY				RIG I			
12 1/4 bit			1.50					Arapie	rapiean							<del></del>		Rig No U Cell Narren			Unit 11	ı 45-6671		
Directional assmbly		12	5.44		_ _			Twin Cr		+		-+						Last BOP Te						
6 6 5/8 HWDP				0.00				- -	Navaj					GAS DATA		TRIP G				Next BOP Test 8/				
18 5" SWDP 545.00			-+-		BC	TTOMS U	TIMI	_	3-12		CONN	GAS	IRIF	343		4	Safety	_		7/26				
Jar				0.00		$\dashv$		- -	GAS UNI	TS.		FROM		SHOWS		ROP (F1	T/HR)		Last	BOP D	rill		7/26	
4 5" HWDP Casing rollers				7.97		_		_ -	0/10/0111										Last	Oper <u>at</u>	e P	ipe Rar		
Guamig																ļ			₩			lind Ra		
Total BHA:				1.91			T. TÖR		RD. ELEVA	TION	<del>ا</del> ــــــــــــــــــــــــــــــــــــ	L TO K	B	KB ELEV	ATION	INTERMEDI	ATE C	SG		Operat		nnular NEXT	CASING	
-		BHA WT	PU V	+	50 WT	-   ~	375	-	5,839			17		5,856					13 3/8	@ 24	48			
											s	URV	EYS										,	
MD	INC	L. AZIML	TH TVD	SECT	ION N+	S- E	+/W-	DLS	TOOL	7	MD	INC		AZIMUTH		TVD		TION 40	-1882			DLS 4.34	MWD	
6,067	39.	40 232.	00 5061	303			2431	2.05	MWE		,256	32.		223.60		214 294		89		3 -25	$\rightarrow$	1.81	MWD	
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		Unit Rig #111   Sevier UT   6/30/05   43-041-30033   George Urt																				
Operato DATE	or:	Wolverin	orut	an, LLC	CON	ITRACT					T	COU	NTY, STATE	SPUD DATE				I * *				
07/25/05 Wolverine Federal 19-1 DAYS FI SPUD PRESENT OPERATIONS @ MIDNIGHT							1.01				PROGRESS			6/30/05 ING TIME	43-0 ROP	41-3		33 George Urba				
26 Drilling				5,975				41	0	20	0.00	20.5			Arapiea	n	7750	md				
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10.0		34	n/c		2/32	10.5						T D/	ATA									
BIT SIZE	IZE MFG. TYPE IADC SERIAL CODE		L NO.			TS (1/32nd*) or TFA		II	N	OUT	FOOTAGE	HOURS	ROP		MTR	RPM RT+MTR	WOB	T B	ONDITION			
NO. 5 12.2	250 F	Reed HF	53AKPR	_		PB4483		$\overline{}$		24	37	36	4769	1033	55.50	18.6		Υ	30-120		2 3	1
6 12.2		Sec EBXS20S 517 10565860		24		24 2	24	47	69		1206	61.00	19.8		Y	30/120	45	├				
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PUMP	MANU	FACTURER	LINER	STRO	KE GAL/S1	K SI	РМ	GPM	AV DP	_	DC	PUN	MP	MTR DIFF	нн	P / IN <sup>2</sup>	EC	CD		68 spm	74 spm	73 spm
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воттом	HOLE A	ASSEMBLY	LENG	-	Ö.D.	T	I.D.	-	FORMATIO		Ε-	MD	-	TVD		LITHOL	OGY		Rig No		Unit 11	1
12 1/4 bit			5.44		╁		Arap Twin (					+						Cell N		918-	345-6671	
Directional assmbly 6 6 5/8 HWDP			+	0.00		T		Navajo					工						Last B	7/17		
18 5" SWDP 545.00				BO	TTOMS UP	TIME		G GAS		GAS DATA CONN (	GAS	TRIPG	SAS		Next BOP Test 8/17 Last Safety Meeting 7/25							
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4 5" HWDP 120.00 Casing rollers 37.97				$\vdash$	GAS UNIT	S	<del>                                     </del>	FROM	_	10		KOF(F)	in its		Last Operate Pipe Rar							
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						_					કા	URV	EYS				,				1 6 6	700
MD	INCL.	AZIMUT		SECTI		-	/W-	DLS 1.42	MWD		и <u>р</u> 783	40.		235.50	<del>                                     </del>	™ 845	28	110N 45	+/s-	-2282	5.28	MWD
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FROM				T 24 HO																		
	10:30				m 5565		o807	<u>:                                    </u>		,					<u></u>	<u></u>						
13:30 11:00		_	Sh	ort ti	ump slu rin 23 st	tand:	s an	d mo	ve casi	ing 1	torq	ue i	roller	s up hole.		-						
	14:30		Ke	llv u	n wash	30' t	o bo	ttom	5' fill p	ump	o sw	veer	<b>)</b> .									
			Sli	de w	ith tool	face	at 1	80 de	eg. Ou	t, h	ole	war	nts to	build ang	le						-	
14:30	0:00	9.50	Dr	illing	from 58	307'	to 59	9/5'.										-				
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	otal	24.00																				

		En	n		E)	(AC	T Er	ιg	inee	rin	g, Inc.	(918) 599-9400													
	ator:	Wolve		DAILY DRILLING REPORT										24 hrs - midnight to midnight											
DATE	ator.	WELL			, Otali,		CONTRA	ONTRACTOR								SPUD DATE	AP# SUPERVISOR 43-041-30033 George Urban								
07/24/05 Wolverine Federal 19-1							U TOT/		1   P	Sevier, UT 6/30 PROGRESS DRILLING TIME					ROP			MATION	v I		1. DEPTH				
DAYS F/ SPUD PRESENT OPERATIONS @ MIDNIGHT  25 Drilling						""		565			439	$oldsymbol{\perp}$	23.	.50	18.7		Α	rapi	ean	Щ.	7750 md				
												MU	D DATA	_						"		1000	мвт	% LCM	
v	٧ī	VIS.		WL	СК	PI	H	SAND	-t	SOLIDS		PV			GELS	DEPTH	7/24/08:00		O,00			100	МВІ	76 ECM	
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					1100	SERIAL N	10		ETS (1)	(32nd*)		BIT	DATA		FÖÖTAĞE	HOURS	ROP	_	MTR		- 1	WOB		ONDITION	
BIT NO.	SIZE	MFG.	TYPE	- 1	IADC CODE	SERIAL				TS (1/32nd*) or TFA							40.0		V	RT+M	$\neg$	45	т в 2 3	G	
5 1	2.250	Reed	HP53AH	PR :	537	PB448	33	24	24			373		59	1033	55.50	18.6 19.4	_	Y	30-1	-	45	2 3	<del>  '</del>	
6 1	2.250	Sec	EBXS2	os :	517	105658	60	24	24	4 2	24	476	9	+	796	41.00	#DIV/0		-	30/1	20			<del>                                     </del>	
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PUM	. ]	NUFACTUR	ER LIN	ER I S1	TROKE (	GAL / STK	SPM		PM	AV DP	AV DO	c T	PUMP	м	TR DIFF	нн	P / IN²	EC	Ö,		$\Box$	69 spm	74 spm	73 spn	
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1		National	-		8.5	2.96	125	+	70		-	+	11750		150	<del>                                     </del>					$\dashv$	220			
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3		Nationa			8.5	2.96	125		70 <u>T</u>					- 61	EOLOGIC	:					₹	SENER	AL INF	0	
POT	TOMPOU	E ASSEMB	DRILI	STR NGTH		O.D.	1.0	).	┝╤	ORMATIC	N N	_	MD		TVD		LITHOL	OGY				RIG	INFO		
BOTTOMHOLE ASSEMBLY  12 1/4 bit			-	1.5	<del></del>					Arapiea	n								_	Rig			Unit 11	1 645-667	
Directional assmbly			125.4	4				Tv	vin Cre	ek								_	<b>├</b> ─		rren OP Tes		7/17		
6 6 5/8 HWDP 1/2			180.0	00				II	Navajo					GAS DATA		<u> </u>			_		OP Tes		8/17		
18 5" SWDP 545.00					вот	TOMS UP	TIME		3 GAS 3-12		CONN	GAS	TRIP	AS	_	-		fety Mo		7/24					
Jar 32.00						<u> </u>	GAS UNIT			ROM		SHOWS		ROP (F1	r/HR)		Las	t BC	OP Drill		7/24				
4 5" HWDP 120.00						- GAGGANIG				-KOM							Las	t Op	oerate l	Pipe Ra	<u></u>				
Casi	ng rolle	ers	+	37.8	<del>" </del>				╟╴											Las	t Op	oerate l	Blind Ra	<u> </u>	
			<del>     </del>	041.9											KB ELEV	ATION	INTERMEDI	ATE C	SG			perate A	Annular NEXT	CASING	
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52	16 41	20 22	7.80 43	81 :	2521	-1513	-201		.99	MWD	5,40		30.90		233.30		534		31	-15 16		-2100 -2142	5.98 3.43		
5,3	11 36	.00 229	9.00 44	56	2579	-1551	-206	0 4.	.07	MWD	5,50	00	33.00		238.00	4	615	_ 20	001	1 - 10	12	-2142	0.40	1	
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0:0			.00 50		servic		.5 50	<u></u> -																	
14:3		_	50	Drill	from	5334'	to 55	65'																<del></del>	
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				This	am c	drilling	@ 5	725'																	
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·		Eng	ineering	& Sui	pervisi	on	-	E	XAC	T	 Eng	gin	eer	ing	, Inc	•			(9	18) :	599-	9400		
Operat	or:		ne G&O Co				.		LYI								2	24 hr	s - 1	nidni		to mid		
DATE	.01.	WELL	118 000 0		.,	CON	TRACT				-		CO	UNTY, S	TATE	SPUD DATE		AP#			S	UPERVIS		rhan
07/2			Olverine F			<u> </u>		Unit	Rig #1	111	TPRO	GRES		evier,		6/30/05 NG TIME	43-0 ROP	41-3		MATIO	<u> </u>		orge U	
DAYS F/S		PRESI		Drillin					5,126			35		.	17	.50	20.4		_/	Arapi	ean		7750	md
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WT		VIS.	WL		СК	PH	S	AND	SOLI		Р	<del></del>	ΥP	-	GELS	DEPTH	DATE/TIME		ORIC	$\rightarrow$			MBT	% LCM
10.1		31	n/c	2	/32	8.0	0	.50	5.2	25		4	10		8/10	4862	7/23/08:00	13	2,00	<u> </u>	3	100		
à		uro I	TYPE	IADC	SERIA	NO.		JETS	(1/32nd°)		B	T D/	OUT	FC	OTAGE	HOURS	ROP		MTR	RPN	<i>7</i>	WOB		ONDITION
BIT SI NO.	ZE	MFG.	ITPC	CODE	JENIA	.,,			TFA		<u> </u>						40.0		_	RT+M	_	45	т в 2 3	G
5 12.	250		P53AKPR		PB4	-	24		24	24	37	-	4769	+	1033 357	55.50 17.50	18.6 20.4	-	Y	30-1 30/1	-	45	2 3	
6 12.	250	Sec [	BXS20S	517	10565	5860	24		24	24	47	69			357	17.50	#DIV/0	!	Ė	30/1	-			
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PUMP	MAN	JFACTURE	LINER	STROKE	GAL / ST	K SP	M	GPM	AV DP	A	/ DC	PUN		MTR		нн	P/IN <sup>2</sup>	EC	D	F	E	69 spm	74 spm	100 spm
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٣	IV		DRILL S			<del></del>		=				_		GEC	LOGIC	3					G		AL INF	0
BOTTO	MHÖLE	ASSEMBLY	LENG		O.D.	Ţ	I.D.	$\dashv$	FORMATI	ON		MD			TVD		LITHOL	OGY		<u> </u>			INFO Unit 11	1
12 1/4 t				1.50		┼		—∤—	Arapie		├		-+							Rig Cell				' 45-6671
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6 6 5/8 18 5" S'		<u> </u>		5.00		1			TTOMS U		<u> Т</u>	G GAS	<u>.                                      </u>	GA	S DATA	SAS	TRIP	SAS		Nex	t BO	P Test		8/17
Jar	****		<del></del>	2.00							_	3-12			Tanka :		19	)		Last	Saf	ety Me	eting	7/23
4 5" HV	VDP		120	0.00				$\perp$	GAS UNI	īS		FROM	干	Si	TO TO		ROP (FI	/HR)		_		P Drill	D-	7/23
Casing	roller	3	37	7.97		-		-⊩			┢		-+		<del></del>	<del></del>				<del></del>			ipe Rai	
ļ			<del>                                     </del>					-			┢									-	<u> </u>		nnular	
Total E		BHA WT.	1,041 PUW		SO WT.	ROT.	. TORC	NUE GI	RD. ELEVA	TION	Gt	L TO K	8		KB ELEVA	TION	INTERMEDI	ATE CS	G	LA	ST ĆA	SING		CASING
140		89	225		105	<u> </u>	330	Щ	5,839		L	17			5,85	6	L			13 3	/8 @	2448		
				r		T = :	I	DLS	TOOL	П.	SI VID	JRV		AZIM	IIITH	- 	VD	SECT	rion	N+/	s. T	E+/W-	DLS	TOOL
мD 4,838	40.4			2274	-1352	E+/		0.83	MWE	-1	027	42.		230			239	239	97	-143		-1923	1.62	MWD
			0 4168	2335	-1392	-18	75	0.40	MWE	5,	122	41.	20	229	.70	4:	310	240	60	-147	72 .	-1971	0.99	MWD
													TIVI	ΤΥ										
FROM		1		ZA HOUR	s: ew bit	024	m··	d mai	or to	ot 8.4"	W/D				<u>-</u>						_			
0:00	1:00 4:00		TIL	1 may	e casi	anu na m	ller	un l	ole v	vash	an	d re	am 3	30' to	botto	m, pump	sweep.							
1:00 4:00	8:30		Dr	ill from	4769	to 4	898	, <b>'</b>																
8:30	11:0		Rig	g repa	ir, Wel	d pir	n ho	le in s	stand	pipe	. ( L	Jnit (	orde	red r	new s	tand pipe	:)							
11:00	0:00	13.0			4898																			
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			Th	is am	drilling		5201	i'									~~!!!	—# <b>W</b>			# <b>1</b>			
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Daily T	otal	24.0							<u></u>															
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·		Engir	eering	& Sur	ervisi	on	-	 E	XAC	T	Enc	gine	 eeri	ng, Inc				(91	18) 59:	9-9400		
0			G&O Co											REPO		2	24 hr	s - m	nidnigh	t to mid		
Operato	or: \	Well Well	G&O Co	of Utan	I, LLC	CONT	RACTO			_			ÇOU	NTY, STATE	SPUD DATE		API#		_	SUPERVIS		
07/22	2/05	Wol	verine F			1_		Unit	Rig #1	11	1000	GRESS		vier, UT	6/30/05 ING TIME	43-0- ROP	41-3		AATION		orge UI	nan
DAYS F/ SP		PRESEN	OPERATIO				T	TAL DI	₽ТН 1,769		PRO	33			'.50	19.1		Α	rapiea	n	7750	md
23		<u> </u>		:/O BH					7,700	_	MI		ATA									
wr		VIS.	WL		СК	PH	SAI	4D	SOLIDS	s %	P		ΥP	GELS	DEPTH	DATE/TIME	_	ORIDE	_	-	MBT	% LCM
9.9		31	n/c	2	/32 1	0.0	0.9	50	5.5	0		•	9	7/9	4551	7/22/08:00	10	8,00	0	2380		
									1100 100			T D	ATA OUT	FOOTAGE	T HOURS	ROP		MTR	RPM	WOB	DULL C	ONDITION
BIT SIZI NO.	E M	IFG.	TYPE	CODE	SERIAI	NO.			1/32nd") TFA					100				$\sqcup$	RT+MTR		T B	G
5 12.2	50 R	eed HP	53AKPR	537	PB4	183	24		24 2	24_	37	36	4769	1033	55.50	18.6		Y	30-120	45	2 3	
6 12.2	50 S	Sec EE	XS20S	517	10565	860	24	1	24 :	24	47	69		-	<del> </del>	#DIV/0		$\vdash$				
					<u> </u>			+-			+				ļ	#DIV/0		$\vdash$				
					<u> </u>			<u> </u>	DRAULI	-						,,,,,,,,,,				SLOW	PUMP	
PUMP	MANUE	ACTURER	LINER	STROKE	GAL / ST	K SPI	м	GPM	AV DP	_	AV DC	PUN	ИP	MTR DIFF	нн	P / IN <sup>2</sup>	EC	D.				100 spm
NO.	INIAI110F	IONER		LENGTH	1	<u> </u>	_ _		<u> </u>	$\perp$		PRE		PRESS.			<u> </u>			170		
1	Na	tional	6"	8.5	2.96	12	-	370	<del> </del>	+		145	50	100	-		<del> </del>	╢	2	170	-	
2		tional	6"	8.5	2.96	12	<del>-  -</del>	370 370	<del>  -</del> -	╁			+				$\vdash$	$\dashv$	3		220	
3	Na	tional	6"	8.5	2.96	12	5	3/0	<u></u>	_				GEOLOGI	C					GENER	AL INF	0
BOTTOM	HOLE AS		RILL ST		O.D.	π_	Ī.Ď.	╫	FORMATIC	)N	Τ.	MD		TVE		LITHOL	OGY			RIĞ	INFO	
12 1/4 bi			1	.50					Arapiea	ın_									Rig No		Unit 11	
Direction	nal ass	mbly	125	.86		↓		┸	win Cre		<del> </del>					<del> </del>			Cell No	orren OP Test		45-6671 7/17
6 6 5/8 H			180			╁		╆	Navajo					GAS DATA	~	TRIP G	276			OP Tes		8/17
18 5" SV	VDP		545					_ BO	TTOMS UP	TIM		G GAS 3-12		CONN	GAS	INIF	3/13			afety Me		7/22
Jar 4 5" HW	'DB			0.00		+		╆	GAS UNIT	<u> </u>		FROM		SHOWS		ROP (F	/HR)		Last B	OP Drill		7/22
Casing r			<del></del>	.97		1		╁										_	Last C	perate F	ipe Rar	<b> </b>
Cac.i.g								I										∦		perate E		<b> </b>
Total B			1,042		SO WT.	BOT	TORGI		RD. ELEVA	TION	, G	LTOK	<u></u>	KB ELEV	ATION	INTERMEDI	ATE CS	sg		perate A		CASING
STRING W	<u>ντ.</u>   –	89	210		100		300	1	5,839			17		5,85	56				13 3/8	@ 2448	<u>L</u>	
											S	URV	EYS									
MD	INCL.	AZIMUTH	TVD	SECTION			$\neg$	DLS	TOOL	+	MD	INC		230.80		952	_	TION	-1274	-1735	1.71	MWD
4,462	38.50			2034				0.39	MWD		1,650	40.		230.00	<u> </u>		<u> </u>	<u>-</u>				
4,556	38.50	231.10	3879	2093	-1230	)   -10	09	0.00	INVVD	11_	DAIL	V A7	CTIVIT				_					
FROM		T -	LAST	24 HOUR	S:						2712											
0:00	0:30	0.50	Dri	ll from	1 4438	' to 4	454'					1							<del></del> .			
0:30	1:00	0.50						10' to	4420	, b	ump	nıgl	n VIS	sweep.								
1:00	14:30			serv	1 4454	ιο 4	705											-				
	15:00 18:30		Dri	selv	1 4705	' to 4	769'															
	19:30		Mu	id Mo	tor loc	ked u	ıp, p	ump	slug fo	or	trip.											
	23:00		PC	ОН р	ulled t	ight f	rom	333	0' to 32	27	5'											
23:00	0:00	1.00	LY	/DN M	lud M	otor a	and E	Bit.						<del>.</del>								
		-	-										-									
<b></b>		┼																				
$\vdash \vdash \vdash$		+	<del> </del>													CUM		Name of Street	ETA	<b>A</b>		
																<u> VVII</u>	Ш			٦٢_		
			Th	is am	drilling	@4	1799	<u>'</u>														
		<del> </del>	<u> </u>																			
$\vdash$		<del>                                     </del>																				
Daily To	otal	24.00	$\vdash$	<del></del>						_												
1 20.17		1						_		_	**		A 7 4 7			<u>-</u>					-	

·	<del></del>	Fne	gineering	& Sun	ervisio	 on		E	XAC	TE	ng	jine	eri	ng, Inc	•			(9	18) 59	9-9400		
Operat			rine G&O C				D				_			REPOR			24 hr	s - r	nidnig	ht to mi	dnight	
Operat		WELL	340 0	- U. Cian	,	CONTR	ACTOR	₹					COU	ITY, STATE	SPUD DATE		AP#		2	SUPERV		rhan
07/2		V	Olverine	ederal	19-1	<u> </u>		Unit	Rig #1		PROC	GRESS	Sey	rier, UT	6/30/05 NG TIME	43-0 ROP	41-3		MATION	I GE	orge U	INGII
	2	PRES	SENT OPERATI	Drilling					,434			431		23	.00	18.7			Arapie	an	7750	md
											MU	D DA				······································					luoz!	% LCM
WT		VIS.	WL			PH .	SAN		SOLID		P\ 2		YP 8	GELS 3/5	<b>ДЕРТН</b> 4120	7/21/08:00		6.00		2340	MBT	76 LCM
9.9		30	n/c	2/	32   10	0.5	0.5	0	5.2	3 1	_	T DA1		3/3	7,20	1.12.11.00.00		-,-,-				
BIT SI	ZE	MFG.	TYPE	IADC	SERIAL	NÖ.			1/32nd")		IN.		OUT	FOOTAGE	HOURS	ROP		MTR	RPM RT+MTF	WOB	T B	ONDITION
NO.			V44.00	CODE	6020	05	28	$\overline{}$	1FA 28	28	229	90 2	2448	158	63.50	2.5	-	<b>Y</b>	30-120		3 4	1
		HTC Bood I	X14-09 IP43AKPF	437	B735		24	+	~ <del> </del>	24	244	-	3736	1288	56.00	23.0		Υ	30/120	40	3 F	-1/8
			IP53AKPF		PB44		24	+		24	37			702	38.00	18.5		Υ	30/120	45		
<u> </u>																#DIV/0	!			J		<u> </u>
									RAUL	_						n / m/2		,			V PUMP	100 spm
PUMP	MANU	JFACTURE	R LINER	STROKE LENGTH	GAL / STK	SPM		SPM	AV DP	AV	DC	PUMP PRESS		MTR DIFF PRESS.	нн	P/IN <sup>2</sup>	EC			us spill	, <del>, , spiii</del>	Jpiii
NO	N	ational	6"	8.5	2.96	125		370				1450	+	100					1	150		
2		ational	6"	8.5	2.96	125	-	370			$\Box$		$oxed{\Box}$				<u> </u>	$\dashv$	2	<b> </b>	180	
3	N	ational	6"	8.5	2.96	125		370	L	<u> </u>					<u> </u>		<u></u>		3	AF	1	
			DRILL S			n		I.	EODMATIC	N 1		MD	1	GEOLOGIC TVD		LITHOL	ÓGY		<u> </u>		ENFO	U
		ASSEMBL		тн 1.50	O.D.	1.1	υ.	<b></b> -	FORMATIC Arapiea			WD.	+						Rig N		Unit 11	1
12 1/4 I		smbly		5.86		<b>†</b>			win Cre										Cell N	lerren	918-6	45-6671
6 6 5/8				0.00					Navajo				Ι.	GAS DATA		<u> </u>				OP Tes		7/17
18 5" S	WDP		54	5.00		<u> </u>		801	TOMS UP	TIME		G GAS	Ŧ	CONN	SAS	TRIP	SAS	曰		SOP Tes		8/17 7/21
Jar				2.00		ļ		╆-				3-12	<u> </u>	SHOWS						Safety M SOP Drill		7/21
4 5" HV				0.00		<b>_</b>		-	GAS UNIT	S		ROM	$\top$	10		ROP (F1	I/HR)	$\dashv$		Operate		
Casing	rollers	3		7.97		<u> </u>		╫╌											Last (	perate	Blind Ra	
Total I	BHA:		1,04	2.33												INTERMEDI	478 CC			Operate A		CASING
STRING		BHA WT			100	ROT. TO		GR	5,839	TION	GL	17 KB	╁	KB ELEVA 5,85		INTERMEDI	ATE CO			@ 2448		
130		89	205		100	30		<u></u>	5,658	1	SI	JRVE	7S					_				
MD	INCL	. AZIMU	тн тур	SECTION	N+/S-	E+/W	-	DLS	TOOL	М		INCL.	Ť	AZIMUTH	1	TVD	SECT		N+/S-	E+/W-	OLS	TOOL
4,085		0 235.		1803	-1054	-146	<del></del>	3.61	MWD	4,2		38.20	_	229.70		658	19		-1124 -1161		0.13	MWD
4,179	37.1	0 232.	60 3583	1860	-1088	-1509	9   2	2.17	MWD		67	38.30		229.60	3	732	19	70	-1101	1-1090	0.13	IVIVID
F0014		7	1 149	T 24 HOURS						D	AIL	ACT	IVII	<u>Y</u>				_				
0:00	3:00	3.0		ill from		to 40	45'				_											
3:00	3:30		o W	ork on																		
3:30	13:0			ill from		to 42	34															
13:00	13:3		0   Ri	g servi ill from	CE 42241	to 44	381									<del></del>						
13:30	0:00	10.5	o Dr	ııı ırom	4234	IU 44	30									<del></del>						
		+									_											
	<b></b>	$\top$																			<del>-</del>	
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L		┷	-																			
		+-																				
$\vdash$		+	+		<del></del>											ΔΑΝ		\ <u></u>	1 1 2 2 1	41		
		$\top$														_CUN		上	Щ	AL.		
			Th	is am d	drilling	@ 45	522'															
		<del></del>																				
Daily T	otal	24.0	<u></u>																			
Daily 1	otal	1 24.1	<u>~ L</u>								CO	STDA	TA									
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Defaulto   Wolverine B&O Co of Utah, LLC   Value   V		-	Enai	neerina	& Sun	ervisio	on		E	XAC	ΤE	ng	jine	erir	ng, Inc				(9	18) 599	9-9400			
No.   Control								D	AIL	_Y [	RI	ĹĹ	INC	3 F	REPOF	₹T	2	4 hrs	s - r	nidnigh	t to mi	inigh		
Data   Part		r: v		e G&O CC	or Otali	, LLC	CONTR					_				SPUD DATE				-				
PRINCE   P		05												Sev										1
Note		ID.	PRESEN					то				PROC						l			ì			
No.   No.   No.   201	21				Drining			<u> </u>		,001		МÜ		Α								_		_
Ball	WT	$\overline{}$	VIS.	WL		CK F	н	SAN	I di	SOLIDS		_			GELS	DEPTH	DATE/TIME	CHL	ORID			мвт	% LCI	м
1			30	n/c	2/	/32 10	0.0	0.5	0	4.7	5	3		7	3/5	3781	7/20/08:00	100	6,00	00 ] 2	2300			
17   97   97   97   97   97   97   97															LECOTAGE	HOURS	I ROP	- 1	MTR	RPM	WOB	DULI	CONDIT	TION
\$ 175.00   NTC   X14.09   60.0265   28   28   28   28   28   28   28   2	BIT SIZE NO.	м	FG.	TYPE		SERIAL	NO.						<u>`</u> `		TOOTAGE							<del></del>	_	G
1   1250   Read   PP33AFPR   537   P34463   2   4   24   24   24   3736   271   15.00   18.1   Y   30/120   45		00 H	тс ;	(14-09		6020	85	28	28	8 2	28	229	90 2	448	158	63.50			_			+		1
STORY	4 12.250	0 R	eed HP	43AKPR	437	B735	42	24	2.	4 2	24	24	48 3	736					_			3	F   -1	1/8
National   6" 8.5   2.96   125   370	5 12.500	00 R	eed HF	53AKPR	537	PB44	83	24	2	4 2	24	37	36		271	15.00	<del></del>	, -	Y	30/120	45	╁┼	+	
Public   MANUFACTURER   LINES   STRONG   CAL STR   SPW   COM   VOD   Public   MITROPS   MITROP					L	l			<u></u>								#51070		_		SLOV	/ DIII/	<u> </u>	
National   6"   8.5   2.96   125   370   1450   100   2   140   170   140   1   170   1   170   1   170   1   1   170   1   1   170   1   1   170   1   1   170   1   1   1   1   1   1   1   1   1				1	07000-	I CAL LOT	con				_	ω	PUMP	ï	MTR DIFF	нн	P/IN²	EC	D					spi
National   6"   8.5   2.96   125   370   1450   100   1   170   170   140   170   170   140   170   170   140   140   170   140		MANUF	ACTURER	LINER		GAL / STR	JPM																-	
National   6"   8.5   2.96   125   370		Nat	ional	6"	8.5	2.96	125				<u> </u>		1450	-	100					<del></del>	170	145	+	
National   Part   Par	2	Nat	ional											┼								140	+	
DRILL STRING	3	Nat				2.96	125	:	370		<u></u>			<u></u>	TENT EN						CENE	AT IX	FC.	_
BOTOMORE ASSEMBLY   LEWENT						0.5			<u> </u>	OBMATIO	N T		MD				LITHOLO	OGY		<u> </u>				
Twin Creek			SEMBLY	+		U.D.	<u> </u>	<u>.                                    </u>						T						Rig No		Unit 1	11	
18.0			mbly	+	_						$\overline{}$									Cell No	rren	918	-645-6	367
8 S'SWDP				+						Navajo					A10 B171		<u> </u>		_				<del></del>	_
3-12   SPROWS   Last Safety Meeting   77.20   Last Operate Pipe Rav   Last O				545	5.00				вот	TOMS UP	TIME	В	G GAS	$\vdash$	CONN	AS	TRIPG	AS	듸				-	_
120,00   1	Jar			32	2.00				<b> </b>				3-12		SHOWS				-					
Total BHA: 1,004.23	4 5" HWD	P		120	0.00				1-3	GAS UNIT	s	F	ROM	F			ROP (FT	/HR)						20
Total BHA: 1,004 23 STRING WI BILAWT. FUW. 55 WT. R0T.TOROUT GRO. ELEVATION GL. TOR MEDIATION STRING WITE BILAWT. FUW. 55 WT. R0T.TOROUT GRO. ELEVATION GL. TOR MEDIATION STRING WITE CSG TAST CASING				ļ		<del></del>			╬					╄					_					
STRINGTOW   BIRK WIT   FUUT   SOWT   ROY TORQUE   GROLELENATION   GLY NEW   SECTION   STRINGTOW   ST				-							$\dashv$			╁		-			_	<u> </u>		Annula	ır	
NO			SHA WT.			SO WY.	ROT. T	ORQUI	GRI	D. ELEVAT	TION	GL	то кв	#	KB ELEVA	TION	INTERMEDIA	ATE CS	G			-	XT CASII	NG
NO.   NO.   AZMUTH   TVD   SECTION   N-7-5   E+7W-   DLS   TOOL   MD   NOC.   AZMUTH   TVD   SECTION   N+7-5   E+7W-   DLS   TOOL   AZMUTH   TVD   AZMUTH   TVD   SECTION   N+7-5   E+7W-   DLS   TOOL   AZMUTH   TVD   AZMUTH	125		89	180		100	30	00	<u>L</u> .	5,839					5,85	8	<u>L</u>			13 3/8 (	@ 2448	<u> </u>		_
NO   NOL   AZBURN   TYO   SECTION   NY   SECTION														S	ATIMITH	,	ND 1	SECT	ION	N+/S-	E+/W-	DLS	Т	00L
1.68   MWI   3.980   242.00   3217   1030   596   1305   1.69   MWD   3.990   39.40   240.50   3434   1744   -1023   -1413   1.68   MWI   3.980   39.40   240.50   3434   1744   -1023   -1413   1.68   MWI   3.980   39.40   240.50   3434   1744   -1023   -1413   1.68   MWI   3.980   39.40   240.50   3434   1744   -1023   -1413   1.68   MWI   3.980   39.40   240.50   3434   1744   -1023   -1413   1.68   MWI   3.980   39.40   240.50   3434   1744   -1023   -1413   1.68   MWI   3.980   39.40   240.50   3434   3				-		1		_			1	$\rightarrow$		$\top$					_					WD
CAST 24 HOURS:   CAST	3,707 4	10.80	242.20	3289												3	434	174	44	-1023	-1413	1.6	3 M	WD
0:00 0:30 0.50 Test motor and MWD 0:30 4:00 3.50 TIH P/U 10 torque reducer subs 4:00 5:00 1.00 Ream from 3680 to 3736 5:00 13:30 8.50 Drill from 3736' to 3888' 13:30 14:00 0.50 Rig service 14:00 17:30 3.50 Drill from 3888' to 3951' 17:30 21:00 3.50 Pull 2 stands and repair standpipe. 21:00 0:00 3.00 Drill from 3951' to 4007'  Level rig while drilling, driller side settled 5"+  CONFIDENTIAL  This am drilling @ 4088'	3,001   3	3.00	244.10	7 0200											7									
0:30 4:00 3.50 TIH P/U 10 torque reducer subs 4:00 5:00 1.00 Ream from 3680 to 3736 5:00 13:30 8.50 Drill from 3736' to 3888' 13:30 14:00 0.50 Rig service 14:00 17:30 3.50 Drill from 3888' to 3951' 17:30 21:00 3.50 Pull 2 stands and repair standpipe. 21:00 0:00 3.00 Drill from 3951' to 4007'  Level rig while drilling, driller side settled 5"+  CONFIDENTIAL  This am drilling @ 4088'  Daily Total 24:00	FROM																							
4:00 5:00 1.00 Ream from 3680 to 3736 5:00 13:30 8:50 Drill from 3736' to 3888' 13:30 14:00 0.50 Rig service 14:00 17:30 3:50 Drill from 3888' to 3951' 17:30 21:00 3:50 Pull 2 stands and repair standpipe. 21:00 0:00 3:00 Drill from 3951' to 4007'  Level rig while drilling, driller side settled 5"+  CONFIDENTIAL  This am drilling @ 4088'  Daily Total 24:00			0.50							<u> </u>			•											
5:00 13:30 8:50 Drill from 3736' to 3888'  13:30 14:00 0.50 Rig service  14:00 17:30 3:50 Drill from 3888' to 3951'  17:30 21:00 0:00 3:00 Drill from 3951' to 4007'  Level rig while drilling, driller side settled 5"+  CONFIDENTIAL  This am drilling @ 4088'  Daily Total 24:00			+							ins.														_
13:30								_	<u>'</u> —-															_
14:00 17:30 3.50 Drill from 3888' to 3951' 17:30 21:00 3.50 Pull 2 stands and repair standpipe. 21:00 0:00 3.00 Drill from 3951' to 4007'  Level rig while drilling, driller side settled 5"+  This am drilling @ 4088'  Daily Total 24.00							.0 00																	
17:30   21:00   3.50   Pull 2 stands and repair standpipe.							to 39	51'																
21:00 0:00 3.00 Drill from 3951' to 4007'  Level rig while drilling, driller side settled 5"+  CONFIDENTIAL  This am drilling @ 4088'  Daily Total 24:00				Pu	II 2 sta	nds ar	nd rep	oair	stan	dpipe.														
CONFIDENTIAL This am drilling @ 4088'  Daily Total 24.00				Dri	ll from	3951'	to 40	07'															-	
CONFIDENTIAL This am drilling @ 4088'  Daily Total 24.00				<del> </del>	<del></del>		4.207 -		:1167	oido -	ottle	d E	"_											
Daily Total 24.00			<u> </u>	Le'	vel rig	wnile	arıllıng	J, ar	mer:	side S	eme	<u>u                                    </u>	Т											_
Daily Total 24.00				<del> </del>																				
Daily Total 24.00			-	-													A 1.1							
Daily Total 24.00	-+		<del>                                     </del>	<del>                                     </del>													YONEI		V	$ \Delta I $				
Daily Total 24.00			1	Th	is am	drilling	@ 40	88'									VVIII IL	/ <u>                                     </u>	1	: !/\ <b>L</b>				
																	<del></del>							
				<u> </u>																				
	Daily Tota	al	24.00	<u> </u>																				

·	-	Ena	ineering	& Su	pervisio	on	•	E	XAC	TE	Eng	gine	eri	ng, Inc	•			(9	18) 59	9-9400		
Operat	tor:		ne G&O C			-	D							REPO				s - n	nidnigh	it to mi		
DATE		WELL	ie dao c	0.01	.,	CONTR	ACTOR	1				Т		NTY, STATE	SPUD DATE		AP#		_	SUPERV		
	9/05		Olverine I			<u>L.</u>		Jnit F	Rig #1	11	I PRO	GRESS		vier, UT	6/30/05 NG TIME	43-0 ROP	41-30		MATION		Orge	
DAYS F/ S	8PUD <b>20</b>	PRESE		ONS @ MI C/OBH			10		.736		"	316			.50	17.1		A	rapiea	n	775	) md
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COST DATA

Form 3160-5 (April 2004)

### **UNITED STATES** DEPARTMENT OF THE INTERIOR BUREAU OF LAND MANAGEMENT

# FORM APPROVED OM B No. 1004-0137 Expires: March 31, 2007

5. Lease Serial No.

SUNDR	Y NOTICES AND RE	EPORTS	ON WEI	LS	UTU-7	73528
Do not use	this form for proposals	to drill d	r to re-e	nter an	6. If India	n, Allottee or Tribe Name
abandoned ı	well. Use Form 3160 - 3	(APD) for	such pro	posals.	N/A	
SUBMIT IN TE	RIPLICATE- Other ins	tructions	on rever	se side.		or CA/Agreement, Name and/or No.
1. Type of Well Oil Well	Gas Well Other					ame and No.
2. Name of Operator Wolverine (	Gas & Oil Co of Utah, LLC				Wolve 9. API W	rine Federal #19-1
3a Address			No. (include	area code)	430413	30033
One Riverfront Plaza, 55 Can  4. Location of Well (Footage, Sec.	npau NW, Grand Rapids, MI  T. R. M. or Survey Description)	616-45	8-1150			nd Pool, or Exploratory Area ant Field
	SL & 1,937 FWL, SW/SW, Se		S, R1W		11. County	or Parish, State
Bottom hole location - 1,216 l	FNL & 940' FEL, NE/NE, Sec	tion 19, T235	5, R1W		Sevier	Co, UT
12. CHECK A	PPROPRIATE BOX(ES) TO	) INDICATI	E NATURE	OF NOTICE,	REPORT, OF	OTHER DATA
TYPE OF SUBMISSION			TYPI	OF ACTION		
Notice of Intent	Acidize	Deepen	_		(Start/Resume)	Water Shut-Off
	Alter Casing  Casing Repair	Fracture New Cor	Treat istruction	Reclamation Recomplete		Well Integrity Other suspend operations
Subsequent Report	Change Plans		Abandon	Temporarily	Abandon	
Final Abandonment Notice	Convert to Injection	Plug Bac	k	Water Dispos	sal	
	subject well have been tempo tion operations will begin app					
#*		· 1	Accent	ed by the	ı	
		1	Utah D	ivision of		Federal Approval Of This
8-23-0	A house			and Minir		Action Is Necessary
	Franciscos (	Date: (	V12	3/05	_4	
xc: DOGM	ي المنافعة من المنافعة المنافعة المنافعة	Ву:	15/	2V)~	et	
4. I hereby certify that the foreg Name (Printed/Typed)	oing is true and correct					
George C. Nicely			Title Engir	neering Technic	ian - EXACT Er	ngineering Inc
Signature A	C. Thinks	·	Date		08/08/2005	
	THIS SPACE FOR F	EDERAL	OR STA	TE OFFICE	USE	
Approved by Conditions of approval, if any, are attertify that the applicant holds legal or	or equitable title to those rights in				Dat	e
which would entitle the applicant to c itle 18 U.S.C. Section 1001 and Title 4	3 U.S.C. Section 1212 make it a	crime for any	person knowir	oly and willfully	to make to any d	enartment or agency of the United
lates any latse, rictitious of fraudulen	at statements or representations as	to any matter	within its juri	sdiction.	DECE	IVED
(Instructions on page 2)					コレント	

AUG 1 0 2005

# **EXACT Engineering, Inc.**

# www.exactengineering.com

415 S. Boston Ave., Suite 734, Tulsa, OK 74103 • (918) 599-9400 • (918) 599-9401 (fax)

Steven R. Hash, P.E. Registered Professional Engineer stevehash@exactengineering.com

# CONFIDENTIAL PLEASE!

August 8, 2005

Mr. Dustin Doucet Utah Division of Oil, Gas & Mining 1594 West North Temple, Suite 1210 Salt Lake City, UT 84114-5801

Re:

Wolverine Federal 19-1 well Sec 17 T23S R01W Sevier Co., UT API# 43-041-30033

Dear Mr. Doucet,

On behalf of Wolverine Gas and Oil Company of Utah, LLC, please find enclosed daily drilling reports for the subject well from August 1, 2005 through August 6, 2005. We have run production casing, marker jt. @ 6954', and rigging up to cement. We respectfully request that the enclosed information remain confidential.

Very Truty Xours,

Chris Nicely **Engineering Technician** 

copy without enclosures via email to:

Wolverine Gas & Oil Co of Utah, LLC: Helene Bardolph

EXACT Engineering, Inc.

well file

AUG 1 0 2005

Petroleum Engineering Consulting, Personnel & Jobsite Supervision

complete well design, construction & management, drilling, completion, production, pipelines, appraisals, due diligence, acquisitions, procedures, temporary personnel and field supervision

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perator:			&O Co	of Utah,	LLC	NTRACT					COUN	ITY, STATE	SPUU DATE	43-04	API#	1033			sok Iger l	Rebs	om_
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				LOTROYE	GAL / STK	SPM	GPA	DRAUL			PUMP	MTR DIFF	H	4P/IN <sup>2</sup>	EC	CD		69 spr	1/4	spiii	00 op.
PUMP NO.	IANUFACTI	JRER	LINER	LENGTH	<b></b>			0 17	5 1		200	PRESS.	<del>                                     </del>				1		-		
1	Nation	al	6"	8.5	2.96	125 125	370	<del>-                                     </del>	<del>-   -  </del>	<del>``</del>					<u> </u>		<u>2</u> 3		+-		480
2	Nation		6" 6"	8.5 8.5	2.96 2.96	125							<u> </u>		<u>L.</u>	1		GENE	RAL	INFC	
3	Nation		RILL ST									GEOLOGI TV		цтног	LOGY				RIG INF	)	
воттомно	OLE ASSEM		LENG		O.D.	1.D.	$\dashv$	FORM		M	-						Rig No		-	it 111	45-66
								Twin (		6,8		5,7		LS-1			Cell N	OP Te		710-0	7/1
							$\exists$	Nav			252	6,1 GAS DATA CONF		TRIP		$\equiv$	Next I	вор т	est		8/1
							{	BOTTOMS	S UP TIME	+	GAS   -50	CON						Safety		ng	8/5
			<u> </u>					GAS	UNITS		ROM	SHOWS	О	ROP (I	FT/HR)			OP D		e Rar	8/5
								GAU	01111									Operat			
			<del>                                     </del>							<del> </del>				+			Last	Operat	e Anı	nular	CASING
Total BH	A:		PU		so Wf.	ROT. TO	FQUE	GRD. EL	EVATION	GL	токв		EVATION	INTERME	DIATE	CSG_		CASING 3 @ 24		NEX.	
STRING W	. BH	AWT.	+-	<del>***-</del>				5,	839		17	5,	856								
									OOL	SUF	NCL.	AZIMUTH		TVD	SE	CTION	N+/S	- E+/	W-	DLS	то
MD	INCL.	AZIMUTI	H TVD	SECTI	ON N+/S-	E+/W		ols T	00.									+-	-		+-
			+	+			工														
										DAILY	ACTIV	ITY									
FROM				AST 24 HO		RILL F	PIPE	& BH/	A					0054							
0:00	9:00 15:00	9.00		DIC III	DIIN 1	82 JT	°S. 7	" - 23#	: - P-1	10 C/	ASING	- MARKE	ERJI@	6954							
9:00 15:00	19:00	4.00	T = 0	CIRC.	CASING	3 - WA	ALL C	N HA	LLIAB	URIC	JN										
19:00	22:00	3.00		RIG U	P CEME	NT C	ASI	SFT	SLIPS												
22:00	0:00	2.00	-	NIPPE	L DOW	4 BOI		<u> </u>													
			+														INT	TIL	M		
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		En	ginee	ring i	& Sup	ervi	sion		Е	XAC	ΓΕ	ngi	nee	rin	g, Inc.				(91	8) 599	9400			
Opera	ator:	Wolve	erine G	&O Co	of Utah	ı, LLC	;	<u> </u>	DΑ	ILY C	RI	LL	ING	F	REPOF	₹T				nidnig	ht to mi			
DATE	05/05	WELL		rine E	ederal	10-1	1	NTRAC		t Rig #1	11		- 1		ity, STATE vier, UT	6/30/05	43-0	<sup>АРІ#</sup>		3	SUPERV	isor dger R	ebs	som
DAYS F/	SPUD		SENT OP	ERATION	NS @ MID	NIGHT			TOTAL.	DEPTH		PROG	RESS		DRILLI	NG TIME	ROP		FOR	MATION	AU	TH. DEPT		
	37		با	ay Do	own Dr	III PI	pe			7,858		MILE	56 DATA	_	3.	00	18.7			\rapie	111			
w	т	VIS.		WL		СК	PH	+	SAND	SOLIDS		PV		ΥP	GELS	DEPTH	DATE/TIME		LORID		CALCIUM	мвт		T PPM
8.	5	35		8.0	1	/32	9.5	(	0.50	1.2	0	7		8	4/8	7770	8/4/08:00	4	,000	)	210		Б,	600
BIT	SIZE	MFG.	TYI	PE	IADC	SE	RIAL NO.	T		S (1/32nd")		BII	DATA	UT	FOOTAGE	HOURS	ROP		MTR	RPM	WOB			IDITION G
NO.					CODE	+-		+-	T	or TFA		-	+				#DIV/0	!		RT+MTF	1	T !!	+	-
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			L			<u></u>				DRAULIC	<u> </u>				<u> </u>		#DIV/0	!	L	L	SLO	V PÜM	 P	
PUMP	MAN	UFACTUR	ER I	LINER	STROKE	GAL.	/STK :	SPM	GPM			/ DC	PUMP		MTR DIFF	НН	P / IN <sup>2</sup>	EC	CD			74 sp		65 spm
NO.	<b>—</b>	lational	+	6"	LENGTH 8.5	+	96	125	370	175	1	75	PRESS.	-	PRESS.				$\dashv$	L 1	+	1	+	
2	<del></del>	lational		6"	8.5	+		125				$\Box$								2			1	
3		lational		6"	8.5	2.	96	125			<u> </u>					<u> </u>				3				480
BOT	TOMHOLÉ	ASSEMBL		L STF		O.D.		I.D.		FORMATIC	ON		MD	T	GEOLOGIC TVD		UTHOL	OGY			GENE	GINFO	FO	
8 1/2 E					.00					Arapiea	an									Rig N		Unit 1		
Directi	onal as	smbly		89	0.68					Twin Cre Navajo		+	,858 ,252	+	5,76 6,12		LS-10				larren 30P Tes		-64: 	5-6671 7/17
18 5" 3	SWDP			545	-					SOTTOMS UP			G GAS		GAS DATA CONN C		TRIP	-			BOP Te			8/17
Jar				32	2.23				-			10	0-50		SHOWS		<u> </u>			<b>I</b>	Safety M		4	8/5
4 5" H				120	0.00 5.98					GAS UNIT	S	F	ROM	+	ТО		ROP (F)	/HR)			BOP Dri Operate		an	8/5 8/3
Casing	rollers				1.96															╙──	Operate		$\overline{}$	8/5
	BHA:	BHA W		863		so w	T R	OT. TOR	ÒUE -	GRD. ELEVA	TION	GI	токв	_	KB ELEV	ATION	INTERMEDI	ATE C	SG		Operate			8/3 ASING
	76	78		380		125		480	<del> </del> }-	5,839		_	17		5,85	6				13 3/8	@ 244	8		
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MD	INC	L. AZIN	HTUN	TVD	SECTION	N N+	·/S- E	+ / W-	DLS	TOOL	+	MD	INCL.	+	AZIMUTH		rvd	SEC	TION	N+/S	E+700	DLS		1000
						工															<u> </u>			
				- 1407	T 24 HOUF						D.	AILY	ACTI\	VIT'Y										
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18:3	_		50	Cir	rc.																			
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Daily	Total	24	1.00																					

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Оре	rator:	Wol	/erin	e G&O Co	of Utai	n, LLC		D	ΑII	LYI	DR	ILI	LIN	G F	REPOR	₹T		24 h	rs -	midnig	ht to m	idnig	ht	
	3/04/0		Wol	lverine F			CONTR	ι	Jnit	Rig #1	111				NTY, STATE vier, UT	6/30/05	43-0	<sub>АРІ#</sub>		33	SUPER	visor eorge	Ur	ban
DAYS	7 SPUD 36	PR	ESENT	T OPERATIO	ыs @ міс Loggin			тот	AL DE	ртн 7,802		PRO	GRESS 189	)		ING TIME	ROP 18.9		ŀ	MATION Arapie:	ı	JTH. DE	<sub>РТН</sub> 50 г	nd
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	MT	VIS		WL			PH	SANI		SOLI		+-	PV	ΥP	GELS	DEPTH	DATE/TIME	+	LORIE		CALCIUM	мвт		LT PPM
	3.5	35	-	8.0		/32	9.5	0.50		1.2	20	1	7 T DAT	8 <b>7</b>	4/8	7770	8/4/08:00	4	1,000	)			6	,600
BIT	SIZE	MFG.	Τ	TYPE	IADC	SERIA	NO.	J		1/32nd")			N	OUT	FOOTAGE	HOURS	ROP		MTR		WOB			NDITION
NO.	8.50	Sec	EE	3XS30S	537	10709	700	12	$\overline{}$	TFA	12	70	065	7542	477	24.50	19.5		Y	30/120	-	7	в 2	G I
9	8.50	Reed	ЕН	P53KPR	537	0R6	<del></del>	12	┿	2	12	+		7802	260	12.00	21.7		Y	30/120	+		_	<u></u>
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		1				1			<u> </u>							<u> </u>	#DIV/0	)!				Ш		
PUM	P M/	NUFACTU	RER	LINER	STROKE	GAL / ST	K SPM		HYDI PM	RAULI AV DP		V DC	PUMF	· T	MTR DIFF	Нн	P / IN <sup>2</sup>	EC	D			<b>W PU</b>		65 sprr
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				RILL STI	RING										GEOLOGIC	3	-				GENE	RALT	VFO	,
вот 8 1/2		E ASSEMB	LY	LENGT	.00	O.D.	I.D	).	⊩─	FORMATI Arapiea		$\vdash$	MD	_	TVD		LITHOL	.OGY		Dia N		G INFO	444	
		ssmbly		t	.68		<u> </u>		$\vdash$	win Cre		+ 6	3,858	+	5,76	9	LS-10	00%		Rig No Cell N		Unit 91		5-6671
					0					Navaj	)	7	,252		6,12	9	LS-10				OP Tes			7/17
	SWDP			545			-		ВОТ	TOMS UP	TIME		G GAS	+	CONN	SAS	TRIP	GAS			3OP Te		4	8/17
Jar 4 5" H	WDP			120	.23				<u> </u>	GAS UNIT			0-50 FROM	<u> </u>	SHOWS		ROP (FT	-715t			Safety M SOP Dril		-	8/3 8/3
	g roller	s			.98				<u> </u>	GAS UNI	3		FROM	$\dagger$	10		ROP (F)	I/HR)			perate		Ran	8/3
																				Last C	perate	Blind	Rar	8/3
	I BHA:	BHA V	ſΪ.	863		SO WT.	ROT. TO	RQUE	GRI	D. ELEVA	TION	GI	. то кв	+-	KB ELEVA	TION	INTERMEDIA	ATE CS	G .		perate CASING			8/3 ASING
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MD	INC	SL. AZII	MUTH	TVD	SECTION	N+/S-	E+/W-	Di	LS	TOOL	╁	MD	INCL.	<u> </u>	AZIMUTH	Γ	VD	SECT	TION	N+/S-	E+/W-	DL	3	TOOL
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											D.	AILY	ACTI	VITY										
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Daily	Total	24	.00														··							

		Ei	ngine	eering	& Su	pervis	sion		E	XAC	СТ	Er	ngir	neer	in	g, Inc.				(91	8) 59	9-9	400		
Ope	rator:	Wolv	erine	G&O Co	of Uta	h, LLC		-	DAI	LY	D	RII	LLI	NG	R	EPOF	<b>RT</b>		24 hr	'S - I	nidni	ght (	to mic	inight	
DATE		WEL	L				cor	NTRAC'								TY, STATE	SPUD DATE		API#			S	UPERVI		
	3/03/05 7/SPUD			erine F					Unit	Rig #	‡11 <sup>°</sup>		PROGRE		Sevi	er, UT	6/30/05 NG TIME	43-0 ROP	41-3		MATION			Orge L	
DATO	35				RILLI			]		7,613	}			177		10	.00	17.7		/	Arapie	an		7750	md
_												_	MUD	DATA											
	MΤ	VIS	_	WL		ск	PH	<del> </del>	SAND	+	LIDS	%	PV	YF	$\dashv$	GELS	DEPTH	DATE/TIME	<del>                                     </del>	LORIC	-	CAL	CIUM	мвт	SALT PPM
8	3.4	35		8.0		2/32	7.0	(	0.50	1 0	).75		7	7		4/7	7537	8/3/08:00	4	,000	)				6,600
BIT	SIZE	MFG.		TYPE	IADC	SEF	IAL NO.	T	JETS	(1/32nd")	)		BIT C	DATA	JT	FOOTAGE	HOURS	ROP	_	MTR	RPM	_	WOB	DULL	CONDITION
NO.			ļ		CODE					TFA				ļ	_						RT+M1	-		т в	
8	8.50	Sec	+	XS30S	537	+	09700	17	+_	12	12	-t	7065	+-	42	477	24.50	19.5		Y	30/12	-	40	7 2	'
9	8.50	Reed	EHF	253KPR	537	OR	6170	1:	2  -	12	12	2	7542	?		71	2.00	35.5		Y	30/12	20	40	-	-
			+			+-		-		-		$\dashv$		+-				#DIV/0		-		$^{+}$		$\vdash$	+
. 1					l				HVE	RAUI	LICS							,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	•	<u> </u>	l		SLOW	/ PUMF	<u></u>
PUM	P MA	NUFACTU	RER	LINER	STROK	E GAL/	STK S	PM	GPM	AVE	_	AV D	- 1	PUMP		MTR DIFF	ння	P/IN <sup>2</sup>	EC	D				74 spn	
NO.	-	Mari		0"	LENGT		<u>.   .</u>	<del></del>	070		$\dashv$			RESS.		PRESS.						+		-	+
1	_	Nationa Nationa		6" 6"	8.5 8.5	2.9	_	25 25	370	+	$\dashv$		<del>-   1</del>	1200		100					2	+		-	+
3		Nationa		6"	8.5	2.9		25		1			$\dashv$	1							3				480
Ť				ILL ST					<del></del> _						G	EOLOGIC	5					G	ENER	AL IN	ō
ВО	TTOMHOLI	E ASSEMB		LENGT		O.D.	$\blacksquare$	I.D.	#	FORMA	NOITA		M	D		TVD		LITHOL	OGY				RIG	INFO	
8 1/2					1.00		_		-∦-	Arapi				50		F 70		10.40	100/		Rig I			Unit 1	
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18 5"	SWDP			545	5.00					OTTOMS		IME I	BG G			GAS DATA CONN C		TRIP		_	Next	во	P Tes	t	8/17
Jar				32	2.23								10-								Last	Safe	ety Me	eeting	8/3
4 5" F	HWDP			120	0.00					GAS U	INITS		FRO	ОМ		SHOWS		ROP (F	T/HR)		Last	BOI	P Drill		8/3
Casir	ng roller	s		75	5.98				-			_												Pipe Ra	<u> </u>
						7.	$\perp$					-												Blind Ra	+
	ALBHA:	BHA \	Vľ.	863	3.89	so wr	. RO	Ť. TOR	QUE G	RD. ELE	VATIO	ON	GL TO	ОКВ		KB ELEVA	ATION	INTERMEDI	ATE CS	SG		TCA		Annular NEX	T CASING
1	176	78	3	350	)	125		400		5,83	39		17	7		5,85	6				13 3/	8 @	2448	<u> </u>	
												_		VEYS										1	
MD			MUTH	6337	3593			852	0.68	MV		ME	)   1	INCL.		AZIMUTH	<u> </u>	TVD	SEC	TION	N+/5	<u> </u>	E+ / W-	DLS	TOOL
7,47 7,56			5.30 8.50	6428	3618	$\overline{}$		866	2.17	MV							<u> </u>					T			<del>                                     </del>
- ,,,,,,,,	- 1											DA	ILY A	CTIVI	TY										
FRO					7 24 HOU					<b></b>															
0:0			.00				/ from					mot	or of	allina	<u> </u>	+									
8:0 9:3			.50 .00		C. HI	VIS S	weep	pur	ıp sıu	y. IVIL	uu I	1100	01 56	aiiiiy	ou	ι.		Viet.							
14:3			.50			it and	moto	or, pi	ck up	new	bit /	and	d mo	tor a	nd	test.									
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16:0	00 21	:30 5	.50	TII		•													-						
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22:0	00 0:	00 2	.00	Dri	ill & S	urve	/ from	75	42' to	7613	3'.							VVIII	IVL	<u>. 11</u>	111/	<u>\</u>			
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D- "	. Tatal	+	4.00																						
Daily	y Total		4.00	l											_	,									

		Er	ngine	ering	& Su	ıperv	vision					EXACT Engineering, Inc. AILY DRILLING REPORT				(918) 599-9400									
Oper	ator:		_	G&O Co												<del></del>	₹T		24 hr	s - n	nidnig	nt to	mid	night	
DATE 08	/02/05	WELI	Wolv	erine F	edera	al 19-	-1	CONTRAC	Unit	Rig#	11			s		er, UT	6/30/05	43-0	API#	003		1	Ged	RVISOR George Urban AUTH: DEPTH	
DAYS F	SPUD 34	PRE	SENT	PERATIO	NS@M		нт		TOTAL D	ертн 7,436		P	ROGRE	ss 71			NG TIME .50	ROP 22.5		1	MATION Trapies	ın	AUTH	7750	md
	J+				1111111					7,100	-			ATA											
	٧T	VIS.		WL		СК	PH	$\rightarrow$	SAND	SOLI		%	PV	YP	$\rightarrow$	GELS	DEPTH	DATE/TIME		ORID	-	CALCIL	JM I	-	ALT PPM
8	.4	38		12.0		2/32	7.0	)	0.50	] 0.	65		7 3IT D	8 8 T A		4/7	7078	8/2/08:00	4	,000			<u> </u>		6,600
BIT	SIZE	MFG.	T 1	TYPE	ÏADO	; s	SERIAL N	D.		(1/32nd")		R	או ווכ	OU	т	FOOTAGE	HOURS	ROP		MTR	RPM		ОВ		ONDITION
NO. 8	8.50	Sec	EB	XS30S	537	_	070970	00 1		TFA 12	12	2	7065	+	$\dashv$	371	16.50	22.5		Υ	30/120	_	.0	T B	G
Ť	0.00	000	1 20%	10000	00,		07007																		
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			<u> </u>		<u> </u>				LIVE	RAUL	100			<u> </u>	1			#DIV/0	!	<u></u>		SI	OW.	PUMP	<u> </u>
PUMF	) MA	NUFACTU	RER	LINER	STRO	KE GA	AL / STK	SPM	GPM	AV D		AV D	P	UMP		MTR DIFF	нн	P / IN <sup>2</sup>	EC	CD				74 spm	73 spn
NO.	-	Nationa	,	6"	LENG <sup>*</sup>		2.96	125	370	+	$\dashv$			100		PRESS.					1	4	80		
		Nationa		6"	8.5		2.96	125	070		$\dashv$		Ť	100							2	<u> </u>			
3		Nationa	ıl	6"	8.5	5 2	2.96	125											<u> </u>		3				
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 18 5"	SWDP		_	545	5.00					Nava OTTOMS (	_	TME I	BG G	AS I		GAS DATA	SAS	TRIP	SAS		Next				8/17
Jar					2.23																Last S	Safety	y Me	eting	8/2
4 5" F	IWDP				0.00					GAS UN	IITS	Ŧ	FRO	M		SHOWS TO		ROP (F1	r/HR)		Last E			(a. D. D.	8/2
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	NG WT. 75	вна v 78		90 W	_	50 V	wr. 25	ROT. ТОР 350		5,83		ON	GL TO			KB ELEVA 5,850		INTERMEDI	ATE C.	30	13 3/8			NEXT	CAGING
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6:00			.00	Dr	ill ce	men	nt float	t colla	r and	shoe	frc	m 6	982	to 70	65										
7:00			.00					rom 7	065' t	o 720	3'														
15:0 15:3			.50 .50		g Se			m 72	03' to	7436	,						· <del></del>								
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						Engineering, Inc. (918) 599-9400																		
Ope	rator:				of Utah										EPOF		2			nidnię	ht to			
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	/01/0: / SPUD				ederal				TOTAL D	Rig #11	1	PROGRE		Jevi		NG TIME	ROP			MATION			DEPTH	
	33			TIH V	V/ 8 1/2	tool	s			7,065		<u> </u>			0.	00	#VALUE	<u> </u>	_ A	Arapie	an	l	7750	md
		1	is.	WL		ск	PH		SAND	SOLIDS	3 %	MUD I	ATAC	_	GEL\$	DEPTH	DATE/TIME	СНІ	LORID	ES	CALCIL	UM N	MBT S	ALT PPM
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PUM	- 1	MANUFACT	TURER	LINER	STROKE	1	STK	SPM	GPM	AV DP	A۱		PUMP RESS.		MTR DIFF PRESS.	HH	P/IN <sup>2</sup>	E	CD		68	spm	/4 spm	73 spm
1		Natio	nal	6"	8.5	2.9	6	125	370			1	800		150			L		_1		_		
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18 5'	SWD	P		54	5.00				B	OTTOMS UP	_	BG	GAS		GAS DATA CONN	GAS	TRIP	SAS		Nex	ВОР	Test		8/17
Jar				3	2.23							3-	12		SHOWS					11	Safet		eting	8/1
4 5"	HWDP	)			0.00		_		_  =	GAS UNIT	S	FR	ОМ	F	TO		ROP (F	T/HR)		-	Oper		ipe Ra	7/30 n 8/1
Casi	ng rolle	ers		7	5.98		$\dashv$		-∦-			-		_			<del>-</del>			₩-			lind Ra	1
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=				<u></u>	<u> </u>							DAILY A	CTIV	/ITY										
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7:		8:30	1.00	R	ia up F	Hallib	ourto	n circ	. Hea	d and	circ										_			
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Da	ly Tota	al	24.00																					



# WOLVERINE GAS AND OIL COMPANY

### of Utah, LLC

Energy Exploration in Partnership with the Environment

December 14, 2005

Mr. David H. Murphy Chief, Branch of Fluid Minerals United States Department of the Interior Bureau of Land Management Utah State Office P.O. Box 45155 Salt Lake City, UT 84145-0155

Re:

Application of Paying Well Determination

Wolverine Federal 19-1

Wolverine Unit Area (UTU80800X)

Sevier County, Utah

**RECEIVED** 

DEC 1 5 2005

Dear Mr. Murphy:

DIV. OF OIL, GAS & MINING

Wolverine Gas and Oil Company of Utah, LLC ("Wolverine"), as Unit Operator, has drilled and successfully completed the following described well within the Wolverine Unit Area (UTU80800X) under agreement dated effective July 28, 2003:

Well Name	Location	Completion Date	Producing Formation
Wolverine Federal 19-1	Town 23 South, Range 1 West Sec. 19: 1,373' FNL & 1,014' FEL (BHL)	12/11/05	Navajo
	Sevier County, Utah		

Enclosed for your review are detailed Engineering Economic Analysis for the Wolverine Federal 19-1 Well. I have also enclosed copies of the Daily Completion Reports and a copy of the Completion Report (Form 3160-4). Based on the analysis, Wolverine has determined that the well is capable of producing oil and associated hydrocarbons in paying quantities (i.e. quantities sufficient to repay the costs of drilling and producing operations, with a reasonable profit) from the Navajo formation. Therefore, we respectfully request the Bureau of Land Management's concurrence with such determination this well.

Mr. David H. Murphy December 14, 2005 Page Two

Within the next couple of days, I will be mailing to you a Fourth Revision to our Navajo Formation Participating Area.

Please keep this letter and all of the enclosures confidential. If you have any questions or need any additional information, please don't hesitate to contact the undersigned.

Very truly,

Richard D. Moritz

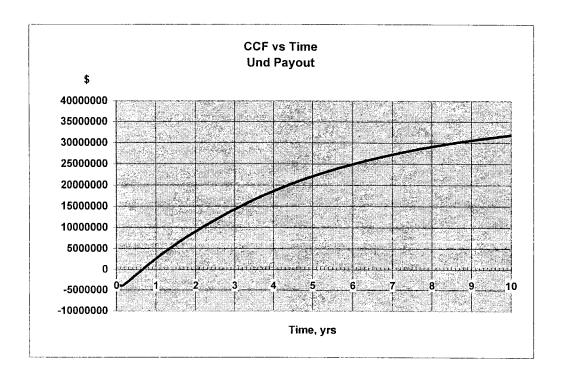
Enclosures

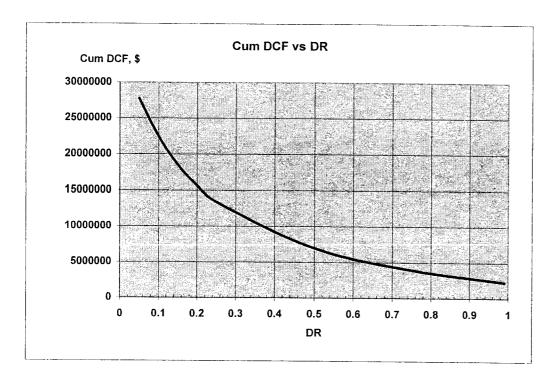
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	2.1%	2.7	
5.			

Gr	oss Production	1		Price			Net Production		
Year	Oil+Cond	Gas	Pint Liq	Oil+Gond	Gas	PInt Liq	Oil+Cond	Gas	Plant Liq
2006	Λ·	. 0	0	#DIV/01	\$3.50	\$22.00	0	0	0
2005 2006	298162	1491	0	\$35.00	\$3.50	\$22,000	238529	1193	g 32 g 0 %
2007	244493	1222	- 0	\$35.00	\$3,50	\$22.00	195594	978	. 0
2007	200484	1002	. 0	\$35:00	\$3.50	\$22.00	160387	802	0 *
2009	164397	822	0	\$35.00	\$3.50	\$22,00	131518	, 658	0.
2010	134805	674	0	\$35.00	\$3.50	\$22.00	107844	539	0
2010	110540	553	0	\$35.00	\$3.50	\$22.00	88432	442	0
	90643	453	0	\$35.00	\$3.50	\$22.00	72515	363	. 0
2012	74327	372	Ö	\$35.00	\$3.50	\$22.00	59462	297	0 :
2013	60948	305	0	\$35.00	\$3.50	\$22.00	48759	244	. 0
2014	49978	250	Ů .	\$35.00	\$3.50	\$22.00	39982	200	0
2015	40982	205	0	\$35.00	\$3.50	\$22:00	32785	164	. `0
2016	33605	168	0	\$35,00	\$3.50	\$22.00	26884	134	0.0
2017 -	27556	138	0	\$35.00	\$3.50	\$22.00	22045	110	0
2018	22596	113	0	\$35.00	\$3.50	<b>\$22.00</b>	18077	90	0
2019	18529	93	0	\$35.00	\$3.50	\$22.00	14823	74	0
2020	15194	76	0	\$35.00	\$3.50	\$22.00	12155	61	0
2021 2022	12459	62	0	\$35.00	\$3.50	\$22.00	9967	50	0
	10216	51	0	\$35.00	\$3.50	\$22.00	8173	41	0
2023	8377	42	Ö	\$35.00	\$3.50	\$22.00	6702	34	0
2024	03/1	44							100
emainder	20909	105	0	\$35.00	\$3,50	#DIV/01	16727	84	0
Total	1639200	8196	0				1311360	6557	; 0

### WGO Federal 19-1 Well

Cash Flow	Net Rev	St/Loc Tax	OpCost	Oplnc	Cap Exp	Cash Flow	Cum CF	Dis CF	Cum DCF
Year	*M	\$M	\$M	\$M	\$M	\$M	\$M.:	\$M	\$M
2005	\$0.00	\$0.00	\$0.00	\$0.00	\$3,815.50	-\$3,815.50	-\$3.815.50	-\$3,815.50	-\$3,815.50
2006	\$8,352.71	\$609.75	\$145.55	\$7,597,41	\$0.00	\$7,597.41	\$3,781.91	\$6,852.09	\$3,036.59
2007	\$6,849.22	\$499.99	\$137.79	\$6,211.43	\$0.00	\$6,211.43	\$9,993.34	\$5,092.81	\$8,129.40
2008	\$5,616.36	\$409.99	\$131.52	\$5,074.85	\$0.00	\$5,074.85	\$15,068.19	\$3,782.64	\$11,912.05
2009	\$4,605.41	\$336.20	\$126.49	\$4,142.73	\$0.00	\$4,142.73	\$19,210.92	\$2,807.16	\$14,719.20
2010	\$3,776.44	\$275.68	\$122.52	\$3,378.24	\$0.00	\$3,378.24	\$22,589.16	\$2,081.03	\$16,800.23
2011	\$3,096.68	\$226.06	\$119.45	\$2,751.17	\$0.00	\$2,751,17	\$25,340.33	\$1,540.68	\$18,340.91
2012	\$2,539.28	\$185.37	\$117.19	\$2,236.72	\$0.00	\$2,236.72	\$27,577.05	\$1,138.71	\$19,479.62
2013	\$2,082.21	\$152,00	\$115.67	\$1,814.53	\$0.00	\$1,814.53	\$29,391.58	\$839.80	\$20,319.42
2014	\$1,707.41	\$124.64	\$114.85	\$1,467.92	\$0.00	\$1,467.92	\$30,859.50	\$617.61	\$20,937.03
2015	\$1,400.08	\$102.21	\$114.74	\$1,183.13	\$0.00	\$1,183.13	\$32,042.63	\$452.54	\$21,389.57
2016	\$1,148.06	\$83.81	\$115.37	\$948.88	\$0.00	\$948.88	\$32,991.52	\$329.95	\$21,719.52
2017	\$941.41	\$68.72	\$116.83	\$755.86	\$0.00	\$755.86	\$33,747.37	\$238.93	\$21,958.45
2018	\$771.96	\$56.35	\$119.25	\$596.35	\$0.00	\$596.35	\$34,343.73	\$171.38	\$22,129.83
2019	\$633.01	\$46.21	\$122.83	\$463,97	\$0.00	\$463.97	\$34,807.69	\$121.21	\$22,251.04
2020	\$519.06	\$37.89	\$127.83	\$353.34	\$0,00	\$353,34	\$35,161.03	\$83.92	\$22,334,95
2021	\$425.63	\$31.07	\$134.63	\$259,93	\$0.00	\$259.93	\$35,420.96	\$56.12	\$22,391.07
2022	\$349.02	\$25.48	\$143.70	\$179.84	\$0.00	\$179.84	\$35,600.81	\$35,30	\$22,426.37
2023	\$286.20	\$20.89	\$155.68	\$109.62	\$0.00	\$109.62	\$35,710,43	\$19.56	\$22,445.94
2024	\$234.68	\$17.13	\$171.42	\$46.13	\$0.00	\$46.13	\$35,756.56	\$7.48	\$22,453.42
Remainder	\$585.74	\$42.76	\$964.31	-\$421.34	\$0.00	-\$421.34		-\$50.35	
Total	\$45,920.56	\$3,352.20	\$3,417.63	\$39,150.73	\$3,815.50	\$35,335.23		\$22,403.06	





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	5.87159			

## Weatherford International Survey Report

Company: Wolverine Gas & Oil Co of Utah

Date: 1/16/2006

Time: 09:27:24

Page:

Field: Covenant Field

Co-ordinate(NE) Reference: Well: Wolverine Federal 19-1, Grid

North

Site: Wolverine Federal #19-1(Pad B1) Vertical (TVD) Reference: KB 5856.0

Well: Wolverine Federal 19-1

Section (VS) Reference: User (0.00N,0.00E,233.32Azi)

Wellpath: 1

Survey Calculation Method: Minimum Curvature

Db: Sybase

Field: Covenant Field

Sevier County, Utah

**USA** 

Map System: US State Plane Coordinate System 1983

Map Zone:

Utah, Central Zone

Geo Datum: GRS 1980

Coordinate System: Well Centre

Sys Datum: Mean Sea Level

Geomagnetic Model: igrf2005

Site: Wolverine Federal #19-1(Pad B1)

Section 17 23S 1W Sevier County Utah

798' FSL & 1937' FWL

Site Position:

Northing: 6731032.57 ft Latitude:

38 47 50.795 N

From: Geographic

Position Uncertainty:  $0.00 \, \text{ft}$ 

Easting: 1516515.42 ft Longitude: North Reference:

111 56 4.933 W Grid

Ground Level:

5839.00 ft

Grid Convergence:

-0.28 deg

Well:

Wolverine Federal 19-1

Slot Name:

Well Position: +N/-S 0.00 ft Northing: 6731032.57 ft Latitude:

38 47 50.795 N

+E/-W 0.00 ft Easting: 1516515.42 ft Longitude:

ft

111 56 4.933 W

Position Uncertainty:

0.00 ft

Wellpath: 1

Drilled From:

Surface

KB

Tie-on Depth:

 $0.00 \, \text{ft}$ 

Current Datum:

Height 5856.00 ft Above System Datum: Mean Sea Level

Magnetic Data:

6/9/2005

Declination:

12.55 deg

Field Strength:

51933 nT

Mag Dip Angle:

64.51 deg

Vertical Section:Depth From (TVD)

+N/-S

0.00

Direction

ft 0.00 ft 0.00 deg

+E/-W

233.32

Survey: Survey #1

Start Date:

8/9/2005

Company: Weatherford International Engineer: Scott Wallace Tool: MWD;MWD - Standard Tied-to: From Surface

Survey:	Survey #	<sup>‡</sup> 1								
MD	Incl	Azim	TVD	+N/-S	+E/-W	VS	DLS	Build	Turn	Tool/Comment
ft	deg	deg	ft	ft	ft	ft	deg/100f	tdeg/10	00ftdeg/1	00ft
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	MWD
175.00	0.30	263.30	175.00	-0.05	-0.46	0.40	0.17	0.17	0.00	MWD
264.00	2.30	262.80	263.97	-0.30	-2.46	2.15	2.25	2.25	-0.56	MWD
357.00	5.30	257.90	356.76	-1.44	-8.51	7.69	3.24	3.23	-5.27	MWD
447.00	6.70	251.90	446.26	-3.94	-17.57	16.44	1.70	1.56	-6.67	MWD
538.00	7.20	236.20	536.60	-8.76	-27.35	27.17	2.15	0.55	-17.25	MWD
630.00	8.90	223.90	627.70	-17.10	-37.08	39.95	2.62	1.85	-13.37	MWD
720.00	11.30	215.50	716.30	-29.30	-47.03	55.22	3.12	2.67	-9.33	MWD
812.00	12.30	218.80	806.36	-44.27	-58.40	73.29	1.31	1.09	3.59	MWD
903.00	13.90	220.20	894.99	-60.18	-71.53	93.31	1.79	1.76	1.54	MWD
994.00	15.70	221.80	982.96	-77.71	-86.80	116.03	3 2.03	1.98	3 1.76	MWD
1088.00	15.10	234.50	1073.62	-94.30	-105.25	140.74	4 3.64	-0.64	4 13.51	MWD
1182.00	15.90	243.30	1164.21	-107.20	-126.72	165.6	6 2.64	0.85	9.36	MWD
1277.00	18.40	236.60	1254.99	-121.30	-150.87	193.4	5 3.35	2.63	3 -7.05	MWD
1371.00	17.80	243.40	1344.34	-135.90	-176.11	222.4	2 2.33	-0.64	4 7.23	MWD
1466.00	20.00	241.90	1434.22	-150.06	-203.42	252.7	8 2.37	2.32	2 -1.58	MWD
1560.00	18.60	243.30	1522.93	-164.37	-231.00	283.4	4 1.57	-1.49	9 1.49	MWD
1652.00	19.60	236.10	1609.88	-179.57	-256.92	313.3	1 2.78	1.09	7.83	MWD
1747.00	23.50	236.60	1698.22	-198.89	-285.97	348.1	5 4.11	4.11	0.53	MWD
1842.00	24.80	237.80	1784.91	-219.94	-318.64	386.9	2 1.46	1.37	1.26	MWD
1937.00	26.10	235.20	1870.69	-242.48	-352.66	427.6	7 1.80	1.37	7 -2.74	MWD
2031.00	30.00	232.70	1953.63	-268.53	-388.35	471.8	6 4.33	4.15	-2.66	MWD
2126.00	32.90	232.70	2034.67	-298.57	-427.77	521.4				MWD
2221.00	35.10	232.40	2113.42	-330.87	-469.94	574.5				MWD
2315.00	37.40	232.90	2189.22	-364.58	-514.13	630.1				MWD
				•			, ,			

# Weatherford International Survey Report

Company: Wolverine Gas & Oil Co of Utah Date: 1/16/2006 Time: 09:27:24 Page: 2

Field: Covenant Field Co-ordinate(NE) Reference: Well: Wolverine Federal 19-1, Grid

North

Site: Wolverine Federal #19-1(Pad B1) Vertical (TVD) Reference: KB 5856.0

Well: Wolverine Federal 19-1 Section (VS) Reference: User (0.00N,0.00E,233.32Azi)

Wellpath: 1 Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: S	-				· T / 337	X / C	DI G	D '11	TT	T - 1/C
MD		Azim	TVD	+N/-S	+E/-W				Turn	Tool/Comment
ft	deg	deg	ft	ft	ft	ft de	g/100ft	deg/100	ft deg/1	OOft
2380.00	39.00	232.90	2240.30	-388.83	-546.19	670.30	2.46	2.46	0.00	MWD
2472.00	41.80	233.60	2310.36	-424.49	-593.97	729.92	3.08	3.04	0.76	MWD
2566.00	42.90	233.10	2379.83	-462.29	-644.77	793.24	1.22	1.17	-0.53	MWD
2661.00	45.20	231.30	2448.10	-502.79	-696.94	859.27	2.76	2.42	-1.89	MWD
2755.00	44.60	230.60	2514.69	-544.59	-748.47	925.57	0.83	-0.64	-0.74	MWD
2849.00	44.20	228.50	2581.85	-587.25	-798.51	991.18	1.62	-0.43	-2.23	MWD
2944.00	43.40	228.10	2650.42	-630.99	-847.61	1056.69	0.89	-0.84	-0.42	MWD
3039.00	42.30	230.40	2720.07	-673.17	-896.53	1121.12	2.01	-1.16	2.42	MWD
3133.00	44.10	231.10	2788.59	-713.87	-946.37	1185.40	1.98	1.91	0.74	MWD
3227.00	43.30	230.40	2856.55	-754.96	-996.66	1250.27	0.99	-0.85	-0.74	MWD
3322.00	42.20	230.10	2926.31	-796.19	-1046.24	1314.67	1.18	-1.16	-0.32	MWD
3416.00	40.80	229.90	2996.71	-836.23	-1093.95	1376.85	1.50	-1.49	-0.21	MWD
3511.00	40.20	232.60	3068.95	-874.84	-1142.05	1438.49	1.95	-0.63	2.84	MWD
3605.00	41.10	240.50	3140.32	-908.51	-1193.08	1499.52	5.56	0.96	8.40	MWD
3707.00	40.80	242.20	3217.36	-940.56	-1251.74	1565.71	1.13	-0.29	1.67	MWD
3801.00	39.80	244.10	3289.05	-968.02	-1305.97	1625.61	1.69	-1.06	2.02	MWD
3896.00	39.80	242.90	3362.04	-995.16	-1360.39	1685.46	0.81	0.00	-1.26	MWD
3990.00	39.40	240.50	3434.47	-1023.55	-1413.14	1744.73	1.68	-0.43	-2.55	MWD
4085.00	37.50	235.90	3508.88	-1054.62	-1463.34	1803.55	3.61	-2.00	-4.84	MWD
4179.00	37.10	232.60	3583.67	-1087.89	-1509.56	1860.49	2.17	-0.43	-3.51	MWD
4273.00	38.20	229.70	3658.10	-1123.91	-1554.26	1917.85	2.22	1.17	-3.09	MWD
4367.00	38.30	229.60	3731.92	-1161.59	-1598.61	1975.93	0.13	0.11	-0.11	MWD
4462.00	38.50	230.10	3806.37	-1199.63	-1643.71	2034.83	0.39	0.21	0.53	MWD
4556.00	38.50	231.10	3879.93	-1236.78	-1688.93	2093.27	0.66	0.00	1.06	MWD
4650.00	40.10	230.80	3952.67	-1274.28	-1735.16	2152.76	1.71	1.70	-0.32	MWD

4744.00	40.30	230.40	4024.47	-1312.80	-1782.04	2213.36	0.35	0.21	-0.43	MWD
4838.00	40.40	229.20	4096.11	-1352.08	-1828.53	2274.11	0.83	0.11	-1.28	MWD
4933.00	40.60	229.70	4168.35	-1392.19	-1875.41	2335.66	0.40	0.21	0.53	MWD
5027.00	42.10	230.10	4238.91	-1432.19	-1922.91	2397.65	1.62	1.60	0.43	MWD
5122.00	41.20	229.70	4309.89	-1472.85	-1971.20	2460.67	0.99	-0.95	-0.42	MWD
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5216.00	39.80	227.80	4381.37	-1513.09	-2017.11	2521.52	1.99	-1.49	-2.02	MWD
5311.00	36.00	229.00	4456.32	-1551.84	-2060.72	2579.65	4.07	-4.00	1.26	MWD
5405.00	30.90	233.30	4534.74	-1584.42	-2100.95	2631.37	5.98	-5.43	4.57	MWD
5500.00	33.00	238.00	4615.36	-1612.71	-2142.46	2681.56	3.43	2.21	4.95	MWD
5594.00	34.00	239.60	4693.74	-1639.58	-2186.84	2733.20	1.42	1.06	1.70	MWD
5689.00	36.10	238.50	4771.51	-1667.64	-2233.62	2787.49	2.31	2.21	-1.16	MWD
5783.00	40.70	235.50	4845.16	-1699.49	-2282.52	2845.73	5.28	4.89	-3.19	MWD
5878.00	40.80	233.40	4917.14	-1735.54	-2332.97	2907.72	1.45	0.11	-2.21	MWD
5972.00	40.50	234.50	4988.46	-1771.58	-2382.47	2968.95	0.83	-0.32	1.17	MWD
6067.00	39.40	232.00	5061.29	-1808.06	-2431.35	3029.94	2.05	-1.16	-2.63	MWD
6160.00	36.10	228.10	5134.82	-1844.54	-2475.02	3086.75	4.38	-3.55	-4.19	MWD
6256.00	32.80	223.60	5213.99	-1882.28	-2514.02	3140.57	4.34	-3.44	-4.69	MWD
6350.00	31.10	223.80	5293.74	-1918.24	-2548.38	3189.61	1.81	-1.81	0.21	MWD
6444.00	28.90	225.20	5375.15	-1951.77	-2581.31	3236.05	2.46	-2.34	1.49	MWD
6546.00	25.40	227.30	5465.89	-1983.99	-2614.88	3282.22	3.56	-3.43	2.06	MWD
6640.00	23.60	229.70	5551.43	-2009.83	-2644.05	3321.05	2.19	-1.91	2.55	MWD
6735.00	22.70	232.00	5638.78	-2033.42	-2673.00	3358.36	1.34	-0.95	2.42	MWD
6861.00	20.80	235.20	5755.81	-2061.16	-2710.53	3405.03	1.78	-1.51	2.54	MWD
6962.00	19.90	234.70	5850.51	-2081.32	-2739.29	3440.14	0.91	-0.89	-0.50	MWD
7007.00	18.90	233.10	5892.95	-2090.13	-2751.37	3455.08	2.52	-2.22	-3.56	MWD
7095.00	17.90	231.30	5976.45	-2107.14	-2773.32	3482.85	1.31	-1.14	-2.05	MWD
7190.00	18.20	232.40	6066.78	-2125.32	-2796.47	3512.27	0.48	0.32	1.16	MWD
7284.00	17.20	225.70	6156.33	-2143.99	-2818.05	3540.73	2.41	-1.06	-7.13	MWD

Company: Wolverine Gas & Oil Co of Utah
Field: Covenant Field Date: 1/16/2006 Time: 09:27:24 Page: 3
Co-ordinate(NE) Reference: Well: Wolverine Federal 19-1, Grid

North

Site: Wolverine Federal #19-1(Pad B1) Vertical (TVD) Reference: KB 5856.0

Well: Wolverine Federal 19-1 Section (VS) Reference: User (0.00N,0.00E,233.32Azi)

Wellpath: 1 Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: S	Survey #	l									
MD	Incl	Azim	TVD	+N/-S	+E/-W	VS	DLS	Build	Turn	Tool/Comment	
ft	deg	deg	ft	ft	ft	ft	deg/100ft	deg/100	ft deg/1	00ft	
7379.00	16.40	216.70	6247.29	-2164.55	-2836.12	3567.5	1 2.86	-0.84	-9.47	MWD	
7473.00	16.90	215.30	6337.35	-2186.34	-2851.95	3593.22	2 0.68	0.53	-1.49	MWD	
7568.00	16.20	208.50	6428.43	-2209.26	-2866.25	3618.38	8 2.17	-0.74	-7.16	MWD	
7662.00	15.20	205.10	6518.92	-2231.94	-2877.74	3641.14	4 1.45	-1.06	-3.62	MWD	
7757.00	14.20	207.20	6610.81	-2253.59	-2888.34	3662.58	8 1.19	-1.05	2.21	MWD	
7858.00	14.20	207.20	6708.72	-2275.62	-2899.67	3684.82	2 0.00	0.00	0.00	PROJECTED	

**Daily Completion Report** Wolverine Gas & Oil Company of Utah, LLC Wolverine Federal #19-1 well SE SW Sec 17 T23S - R01W Sevier Co., Utah

page 1 of 1

**New Completion** 7" 23# HCP110 @ 7858' TD PBTD 7814' on 8/6/05; CBL TD 7808' on 11/20/05 Perfs - Upr NVJO 7335-7457 (proposed) Perfs - Lwr NVJO 7570-7580 11/21/05 ESP intake set @ xxxx' md (~xxxx' tvd) on xxxx GL to RKB: 17'

"TIGHT HOLE"

11/21/05

FIRST COMPLETION REPORT - during October 2005, cleaned location, installed 11" 5m x 11" 5m csg spool plus 11" 5m x 7-1/16" 5m tbg head with (2) 2-1/16" 5m gate valves w/ single valve tree, installed flowline from wellhead to pig launcher at edge of location. Installed conduits for ESP cabling, air, chemical & communications. Haul in 4% KCL treating fluid and flowback tanks. Offload 2-7/8" 6.5ppf L80 EUE 8rd new tbg. 11/20/05 - RU AAA Crane Service to hold WellServ WLU, run VD-CBL w/ GR/CCL from LTD of 7808' to top of good cement @ 6322'. MIRU Nabors (Pool) Well Service Unit @ 4pm on 11/20/05 w/ pump & steel pit. ND wellhead & flowline, set up pipe racks & load with tbg & strap. RIH w/ 7" csg scraper & 255 jts 2-7/8" tbg, tag TD @ 7810, tree up & RU Halco, hold safety mtg, pump 50 bbl tubular cleanup job consisting of caustic wash, chemical wash, gel water & 7.5% HCL. Displace down csg @ 2 bpm & 350 psi with 299 bbl 4% KCL to surface. Hole clean after 270 bbis, RD Halco. SWI&SDFN @ 3:30am. Plan: perf Lwr NVJO CMOL: Steve Hash

Est Daily Completion Cost \$ 73,690

Est Cumulative Comp Cost \$ 421,169 (incl csg,FL,WH,tbg)

Completion AFE 856,438

Est Dryhole Cost

\$ 2,287,354

Dryhole AFE \$ 2,111,388

Est Total Well Cost to date \$2,708,523

Total Well Cost AFE \$ 2,967,826

11/22/05

NU BOPE, RU swab, swab fluid in csg down to 3000' fs (2700' TVD), POOH, RU WLU, perforate Lwr Navajo transition zone 7570'-7580' w/ 4" slick gun, 4 jpf, 40 holes, 90 degr phase, 39gm, 43 hole, 59" penetration. POOH, RD WLU, no evident change in fluid level. TIH w/ 4 jts tbg, csg pkr, 1 jt tbg, 2.25 in id SN and 242 jts of tbg, set EOT @ 7575' w/ pkr @ 7450 & SN @ 7419. Load annulus with 65 bbl 4% KCD (25 bbl less than calculated - conclude fluid entry) and PT pkr & BOPE to 800 psi, OK

SWI&SDFN. Tomorrow's plan: swab test Lwr NVJO. CMOL: Steve Hash

Est Daily Completion Cost \$ 21,190 Est Cumulative Comp Cost \$ 442,359

11/23/05

12 hr SITP zero (Lwr NVJO 7570'-7580')

BFL 300' fs, made 20 swab runs in 8 hrs, swabbed well down to 3800' in 8 runs in 3 hrs, fluid level remained at 4000' remainder of day, recovered 27 BLW & 151 BNW, no shows of oil or gas; sample @ 130 BNW - SG 1.016; pH 7.0. SWI & SDFN @ 4pm. Plan: Shut down for Thanksgiving until Monday 11/28, then set CIBP & move to Upr NVJO. CMOL: Steve Hash

Est Daily Completion Cost \$ 7,190 Est Cumulative Comp Cost \$ 449,549

11/24/05

Shut down for Thanksgiving from Wed 11/23 thru Sun 11/27

to 11/28/05 11/29/05

SITP zero (Lwr NVJO 7570'-7580')

BFL 300' fs, made 1 swab run & recv 9 BNW, no show oil or gas. Released pkr and POOH w/ tbg. RU Weatherford WLU & run JB/GR to 7550' in 7" csg. Pick up 7" CIBP and trip in hole, had trouble with WLU computer, resolved, set CIBP @ 7530' kb, RD WLU. Load csg w/ 4% and pressure test to 1500 psi, ok. Drain up, 20 degF, SDFN @ 8pm. Recovered 27 BLW & 160 BNW, no show from 7570-7580'. Plan: Perf Lwx NVJO & swab natural b4 acid breakdown on Thursday. CMOL: SHash

Est Daily Completion Cost 22,640

Est Cumulative Comp Cost \$ 472,549

-nober

EXACT Engineering, Inc. 415 S. Boston, Suite 734, Tulsa, OK 74103 (918) 599-9400

## **Daily Completion Report**

Wolverine Gas & Oil Company of Utah, LLC Wolverine Federal #19-1 well SE SW Sec 17 T23S - R01W Sevier Co., Utah

"TIGHT HOLE"

page 2 of 2

New Completion
7" 23# HCP110 @ 7858' TD
PBTD 7814' on 8/6/05; CBL TD 7808' on 11/20/05
Perfs – Upr NVJO 7335-7457 (11/29/05)
Perfs – Lwr NVJO 7570-7580 (CIBP @ 7530')
ESP intake set @ xxxx' md (~xxxx' tvd) on xxxx
GL to RKB: 17'

11/30/05

SICP zero (no perfs)

TIH w/ SN & tbg to 3500', RU swab, swab fluid level in csg to 2650' in 10 runs, POOH. RU Precision/Weatherford WLU. Perforate Upper Navajo as follows thru casing per Spectral Density – Dual Spaced Neutron log dated 04-Aug-2005.

Set (1) (2)	Formation Upr Navajo 1 Upr Navajo 1	Interval 7335-7345 7360-7379	Ft 10 19	Jpf 4 jpf 4 jpf	Holes 40 76	Chg 25gm 25gm	Phasing 90 90	Hole size .41 .41
(3) (4) (5)	Upr Navajo 1 Upr Navajo 1 Upr Navajo 1	7391-7405 7414-7417 7430-7440	14 3 10	4 jpf 4 jpf 4 jpf	56 12 40	25gm 39gm 39gm	90 90 90	.41 .43
(6)	Upr Navajo 1 Total	7454-7457 122gr/59n	3 59	4 jpf 4 jpf	12 236	39gm	90	.43 .43

BFL 2650' fs, perf in following order 6,5,4,2,3,1 in 3 runs, 1 misfire run. Fluid level came up to 2345' after perf set 2, then up to 2319' after perf set 3; standby WLU. TIH w/ TS RBP, ball catcher, 6' sub, HD pkr, 1 jt tbg, SN, 1 jt tbg, 6' sub and 235 jts tbg, hang in slips. RU WLU w/ 1-11/16" GR/CL. Log in tools, make 10 ft correction down. Could not determine fluid level, POOH, RD WLU. SWI&SDFN @ 9pm. Plan: swab test natural, acid set for Thursday. CMOL: Steve Hash

Est Daily Completion Cost \$ 29,190 Est Cumulative Comp Cost \$ 501,379 Est Total Well Cost to date \$ 2,788,733

Total Well Cost AFE \$ 2,967,826

12/01/05

SITP 10 psi (Upr NVJO 7335-7457 )

TIH & attempt to set RBP @ 7385', would not set (deviated hole). Set pkr ok, released ok, worked with RBP 2 hrs unsuccessful, then POOH with tools, laydown RBP. No evident problem with RBP, wait 2 hrs for replacement RBP. Pick up new RBP, TIH with RBP & pkr assy, set RBP @ 2500' & 6300' for test, ok. TIH to 7385', worked to set RBP for 1-1/2 hrs, finally set @ 7385' w/ pkr @ 7290'. Drain lines & SWI&SDFN @ 8pm. Plan: swab test natural, acid reset for Friday. CMOL: Steve Hash

12/02/05

SITP psi (Upr NVJO 7335-7457 )

Swab test perf set 1 & 2 (7335' – 7379') RU swab, made 10 runs in 3.5 hrs & recovered 95 bbls total, 42 blw & 53 bbls formation fluid, last 4 samples 95% oil, trace sand while swabbing. EFL 3300'. RD swab, load tbg, released tools, straddle perf set 3 & 4 (7391-7417') RU swab, made 8 runs in 3 hrs & recovered 92 bbls total, 42 blw & 50 bbls formation fluid, last 4 samples 95% oil, trace sand again, EFL @ 4600'. RD swab, load tbg, released tools, straddle perf set 5 & 6 (7430-7457). RU swab, made 6 runs in 2 hrs & recovered 71 bbls total fluid, 42 blw & 29 bbls formation fluid, last run 90% oil, EFL 5300'. Drain lines & SWI&SDFN @ 8pm. MIRU Halco. Plan: acidize. This am 11 hr SITP 400 psi, (7430-7457) SICP 0 psi CMOL: Steve Hash

Daily Completion Report Wolverine Gas & Oil Company of Utah, LLC Wolverine Federal #19-1 well SE SW Sec 17 T23S - R01W Sevier Co., Utah

"TIGHT HOLE"

page 3 of 3

New Completion
7" 23# HCP110 @ 7858' TD
PBTD 7814' on 8/6/05; CBL TD 7808' on 11/20/05
Perfs – Upr NVJO 7335-7457 (11/29/05)
Perfs – Lwr NVJO 7570-7580 (CIBP @ 7530')
ESP intake set @ xxxx' md (~xxxx' tvd) on xxxx
GL to RKB: 17'

12/03/05

6am Finish RU Halco to acidize, HSF. 11 hr SITP 400 psi, (7430-7457) SICP 0 psi All-fluid NeFeHCl w/ inhibitor, morflo III surfactant & chem.-pen surfactant. Load tbg with 15 BW, well not dead, release pkr, reverse hole with 45 BW, well static, run pkr to 7460, spot 600 gal acid 1 bbl across btm perf set 5-6, set pkr @ 7426, pressured zone repeatedly to 1600, 1800, 2000 and then 2200 psi over 30 min period, broke after 3.5 bbls KCl displacement gone @ 2200 psi, communicated to annulus @ ~0.78 psi/ft. Reset pkr @ 7386' above perf sets 3-4-5-6, left RBP below all perfs. Pressured 3-4-5-6 to 1600 and then 1800 psi several times, communicated at 1800 psi to annulus with ½ bbl gone. Moved RBP to 7390' and pkr to 7358', straddle set 2. Spot 1800 gal acid 1 bbl across perfs, set pkr @ 7358', pressure set 2 to 1600 psi, pump in @ 0.1 to 0.5 bpm for 4 bbls, communicate to annulus, increase rate down tbg while pumping 1/4 bpm down csg into set 1 @ 2100 psi. Pump 3600 gal acid with 125 ball sealers (7/8" x 1.1 sg) into set 2 @ 4bpm @ 2500 psi, 20-30 psi ball action, overflush with 10 bbls 4% KCI. ISDP 600 psi. Move RBP to 7360' and pkr to 7250'. Pump 1800 gal acid and 80 ball sealers (7/8" x 1.1 sg) into set 1 @ 5-6 bpm @ 2700 psi, 20-50 psi ball action, overflush with 10 bbls 4% KCL, ISDP 800 psi. 204 BLWTR. RD Halco. Latch RBP w/ ball catcher, reset pkr @ 7250' w/ RBP swinging, RU swab @ 4pm, BFL 300' fs, swabbed 76 BLW to pit, deepest run 1600', had trouble with acid gas pockets between 800 - 1600'. Well KO flwg at 9pm to pit, switched to tank at 10pm cutting 50% oil, ftp zero on open chk. Split rig crew for flow testing. Flowed 120 bbls fluid to tank next 2 hrs, last sample 95% oil. Put well on 14/64" chk, 250 psi FTP, recovered 188 bbls fluid with trace of water next 6 hrs, avg 31 bophr. All treatment load recovered. This am FTP 250 psi on 14/64" chk; Upr NVJO 7335-7457 Plan: flow test CMOL: Steve Hash Est Daily Completion Cost \$ 71,985

Est Cumulative Comp Cost \$ 602,259

12/04/05 Finished laying 2" tbg test lines to temp frac tank battery

Flw'd 780 bbls fluid w/ trace water on 15/64" chk in 25 hrs (6am Sat to 7am Sun) FTP 250 psi this am

Est Daily Completion Cost \$ 5,690 Est Cumulative Comp Cost \$ 607,949

Flowed 751 bbls fluid w/ trace water on a 15/64" chk in 24 hrs (7am Sun to 7am Mon) FTP 260 psi this am. Received 500 bbl KCl water and continued laying test lines. Plan: SWI @ 7am, trip tbg & tools, run pkr & BHP gauges.

Est Daily Completion Cost \$ 7,724 Est Cumulative Comp Cost \$ 615,673 Est Total Well Cost to date \$ 2,903,027

Total Well Cost AFE \$ 2,967,826

### **Daily Completion Report**

Wolverine Gas & Oil Company of Utah, LLC Wolverine Federal #19-1 well SE SW Sec 17 T23S - R01W Sevier Co., Utah page 4 of 4

New Completion

7" 23# HCP110 @ 7858' TD

PBTD 7814' (8/6/05); CBL TD 7808' (11/20/05)

Perfs – Lwr NVJO 7570-7580 (CIBP @ 7539') Perfs – Upr NVJO 7335-7457 (11/29/05)

EOT @ 7280; SN @ 7267; pkr @ 7253 (12/5/05)

GL to RKB: 17'

#### "TIGHT HOLE"

12/06/05

7am FTP 260 psi on a 15/64" chk, shut well in, RU pump lines, release pkr & reverse 55 bbls 4% KCI, well static. POOH w/ tbg and laydown tools, wait 6 hrs for pressure recorder no-go, arrive @ 5pm, make up recorder with 2.30" no-go x 11.72' overall. Pick up (1) 2-7/8" 6.5ppf N80 EUE tbg sub w/ cplg on btm for WLEG (6.10'), (1) 2-7/8" 6.5ppf N80 EUE tbg sub (6.20'), (1) 2-7/8" EUE SN (id 2.250"), (1) 2-7/8" 6.5ppf N80 EUE tbg sub perforated (6.05'), (1) 7" Arrow 1X csg pkr (7.42' x 2.375" id), and TIH w/ 237 jts 2-7/8" 6.5ppf L80 EUE tbg (7251.10'); 7277.97' overall, (+)15' below kb, (-) 10' WL correction, (-) 3' compression; EOT set @ 7280, recorders set @ 7272' (124' above mpp), SN @ 7267, pkr @ 7253 w/ 20k down. Land tbg w/ hanger, ND BOPE, install ESP wellhead, connect well to flowline, RU to swab, swabbed 52 bbls and well KOF @ 11pm to test tank, set chk @ 15/64", FTP 190 psi. Flow well overnight from 11pm to 7am and recovered 242 bbls, trace water, this am FTP 250 on a 15/64" chk. Plan: stabilize then SWIFPBU CMOL: Steve Hash

Est Daily Completion Cost \$ 16,848 Est Cumulative Comp Cost \$ 633,536

12/07/05

7am FTP 250 on a 15/64" chk, flowed well from 7am (12/6) until 12 noon; recovered 153 bbls as follows:

Period 7am-8am 8am-9am 9am-10am 10am-11am 11am-12pm	Choke 15/64" 15/64" 15/64" 15/64"	FTP 250 250 250 250 250	Recovery 30 31 30.5 31 30.5	Remarks
			153	Bbls total in 5 hrs w/ slight trace wtr in samples; no measurable water in 4 full frac tanks after test
12:05pm				Shut well in 12:05pm on Tuesday 12/06/05 - out of tank room
1:05 pm				No reading
2:00 pm		390		2 hr
4:00 pm		390		4 hr
7:00 am		410		19 hr

12/08/05 7 am (12/7) SITP 410 psi (19 hr) - end of 72 hr test will be 12 noon on Friday 12/9/05

Swabbed & flowed approximately 2431 bbls oil during testing thusfar; prep to sell. Oil gravity 41.1 API

12/09/05 7am (12/8) SITP 410 psi (43 hr)

12/10/05 7am (12/9) SITP 410 psi (67 hr)

12/11/05 12noon (12/9) SITP 410 psi (72 hr) RU PLS slickline, retrieve BHP gauges from 7270', RD PLS, returned data sheet & auto-clock to PLS, leave well shut-in pending first sales. CMOL: Steve Hash

TURNED WELL OVER TO PRODUCTION @2pm 12/09/05 -FINAL COMPLETION REPORT Thank you!

## EXACT Engineering, Inc. 415 S. Boston, Suite 734, Tulsa, OK 74103 (918) 599-9400



# United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Utah State Office
P.O. Box 45155
Salt Lake City, UT 84145-0155



IN REPLY REFER TO 3180 UT-922

Wolverine Gas and Oil Corporation Attn: Richard D. Moritz One Riverfront Plaza 55 Campau, N.W. Grand Rapids, Michigan 49503-2616

Re:

4th Revision of the Navajo Formation PA

Wolverine Unit

Sanpete and Sevier Counties, Utah

#### Gentlemen:

The 4<sup>th</sup> Revision of the Navajo Formation Participating Area, Wolverine Unit, UTU80800A, is hereby approved effective as of December 1, 2005, pursuant to Section 11 of the Wolverine Unit Agreement, Sanpete and Sevier Counties, Utah.

The 4<sup>th</sup> Revision of the Navajo Formation Participating Area results in an addition of 163.36 acres to the participating area for a total of 798.77 acres and is based upon the completion of Well No. 19-1, API No. 43-041-30033, located in Lot 8 of Section 19, Township 23 South, Range 1 West (BHL), SLM&B, Federal Unit Tract No. 6, Federal Lease UTU73528, as being a well capable of producing unitized substances in paying quantities.

Copies of the approved request are being distributed to the appropriate agencies and one copy is returned herewith. Please advise all interested parties of the establishment of the 4<sup>th</sup> Revision of the Navajo Formation Participating Area, Wolverine Unit, and the effective date.

Sincerely,

/s/ David H. Murphy

CONFIDENTIAL -

David H. Murphy Acting Chief, Branch of Fluid Minerals

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**Enclosure** 

DIV. OF OIL, GAS & MINING



# WOLVERINE OPERATING COMPANY

of Utah, LLC

Energy Exploration in Partnership with the Environment

February 6, 2006

COMFIDENTIAL

Ms. Carol Daniels Utah Division of Oil Gas & Mining 1594 W.N. Temple, Suite 1210 Salt Lake City, UT 84114-5801

Re:

Wolverine Federal #19-1

Dear Al:

Enclosed please find the following documents for the above referenced well:

- three copies of BLM completion form #3160-4
- directional survey
- geologic report
- mudlog
- Spectral Density, Dual Space Neutron, GR MD & TVD
- HRI MD & TVD
- EMI
- MRIL

Please let me know if you need additional information or have other concerns.

Sincerely,

Helene Bardolph

enclosures

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DIV. OF OIL, GAS & MINING

COLA

UNITED STATES FORM APPROVED Form 3160-4 DEPARTMENT OF THE INTERIOR OMBNO. 1004-0137 (April 2004) Expires: March 31, 2007 BUREAU OF LAND MANAGEMENT WELL COMPLETION OR RECOMPLETION REPORT AND LOG Lease Serial No. UTU-73528 If Indian, Allottee or Tribe Name Oil Well Gas Well Dry Other la. Type of Well Plug Back Diff. Resvr, New Well Work Over Deepen Unit or CA Agreement Name and No. b. Type of Completion: Wolverine Fed Exploration Unit Lease Name and Well No. Name of Operator Wolverine Gas & Oil Co. of Utah, LLC Wolverine Federal 19-1 AFI Well No. 3a Phone No. (include area code) 4304130033 Address 55 Campau NW, Grand Rapids, MI 49503 616-458-1150 Field and Pool, or Exploratory Location of Well (Report location clearly and in accordance with Federal requirements)\* Covenant Field 957 1919 798' FSL & 1937' FWL, Sec. 17, T23S, R1W Sec., T., R., M., on Block and Survey or Area 17, T23S, R1W At surface SESW, SLB&M At top prod. interval reported below 1235' FNL & 921' FEL, Sec. 19, T23S, R1W County or Parish State 12 Sevier 1376' FNL & 1014' FEL, Sec. 19, T23S, R1W Elevations (DF, RKB, RT, GL)\* At total depth 12/11/2006 16. Date Completed 15. Date T.D. Reached 5856' KB, 5839' GL 14. Date Spudded Ready to Prod ]D&A 08/05/2005 06/30/2005 MD Depth Bridge Plug Set 19. Plug Back T.D.: MD 7814' 18. Total Depth: MD 7858 TVD 6392' TVD 6666' TVD 6709' Yes (Submit analysis) ✓No Was well cored? 21. Type Electric & Other Mechanical Logs Run (Submit copy of each) Yes (Submit report) Was DST run? √ No Yes (Submit copy) HRI/GR, SDL/DSN/GR, MRIL, EMI, ALD LOG-Directional Survey? No 23. Casing and Liner Record (Report all strings set in well) Amount Pulled Slurry Vol. (BBL) Stage Cementer No. of Sks. & Cement Top\* Bottom (MD) Type of Cement Wt. (#/ft.) Top (MD) Size/Grade Depth Hole Size Surf. (CIRC) 650 Class G 133 120 0.25 wall Surface 30.0" 20" Surf. (CIRC) 675 CBM 495 2448 Surface 61.0 17.5" 13-3/8" 475 Type V 100 200 Class G 42 ,, 6000 (CAL) 70 230 50/50 Poz 7051 47.0 Surface 9-5/8" 12.25" 5724 (CBL) 47 215 50/50 Poz 7858 23.0 Surface 7"/P-110 8.5" Depth Set (MD) | Packer Depth (MD) Tubing Record 24 Depth Set (MD) Packer Depth (MD) Size Depth Set (MD) Packer Depth (MD) Size Size 7250 2 7/8 Perforation Record Perf. Status 25. Producing Intervals No. Holes Perforated Interval Size Bottom Top below CIBP Formation 0.43" 40 7570-7580 7237 7858 open A) Navajo 0.43" 236 7335-7457 7858 7237 B) Navajo  $\overline{C}$ D) Acid, Fracture, Treatment, Cement Squeeze, etc. 27. Amount and Type of Material Depth Interval 6000 gal NeFeHCl w/ inhibitor & surfactant 7335-7457 Production Method 28. Production - Interval A Oil Gravity Corr. API Water Gas MCF Gravity Date First Test Hours BBL Production BBL Swabbing Date Tested Produced 151 0 11/23/2005 Well Status Gas/Oil RECEIVED Water Gas Oil BBL Tbg. Press. 24 Hr. Csg. Choke BBL Ratio MCF Press. Flwg. Rate Size SI <del>FEB 0 9 2</del>006 28a. Production - Interval B Production Method Gas Gravity Oil Gravity Corr. API Water Date First Test Hours BBL MCF BBL Production Flowing Tested Date Produced <del>DIV OF OIL, GAS &</del> MINING Tr 679 24 12/16/2005 12/06/2005 Well Status Gas/Oil Water Gas Oil BBL 24 Hr. Ratio Choke Tbg. Press Csg. BBL MCF Producing Oil Well Press Rate Flwg. Size nil Tr 0 679 SI 300 12.5/64 CONFIDENTI \*(See instructions and spaces for additional data on page 2)

										<u> </u>				
28b. Production - Interval C														
Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity	Production Method					
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status						
28c. Prod	uction - Inte	rval D												
Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Cort. API	Gas Gravity	Production Method					
Choke Size	Tbg. Press. Flwg. SI	Csg. Press.	24 Hr. Rate	Oil BBL	Gas MCF	Water BBL	Gas/Oil Ratio	Well Status						
29. Disp	29. Disposition of Gas (Sold, used for fuel, vented, etc.)													
Vented														
30. Summary of Porous Zones (Include Aquifers):  Show all important zones of porosity and contents thereof: Cored intervals and all drill-stem tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures														
	recoveries.	1	·											
Form	nation	Тор	Bottom		Desc	criptions, Cont	ents, etc.		Name Top Meas. Depth					
Navajo		7237'	7858'	Oil &	k water			Twin C	Arapien Surface Twin Creek 6848' Navajo 7237'					
								Navajo		1237				
			<u> </u>											
32. Addi	tional rema	rks (includ	e plugging p	rocedure):										
33. Indic	ate which it	mes have l	been attache	d by placin	g a check i	n the appropri	ate boxes:							
			ogs (1 full s			Geologic Repo		rt 🔽 Directio	onal Survey					
			ging and cem			Core Analysis		_	·					
	•	-												
34. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records (see attached instructions)*														
Name (please print) Ellis Peterson							Title Sr. I	Production En	gineer					
Sign	Signature Date 01/18/2006													

Title 18 U.S.C Section 1001 and Title 43 U.S.C Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

#### INSTRUCTIONS

GENERAL: This form is designed for submitting a complete and correct well completion/recompletion report and log on all types of wells on Federal and Indian leases to a Federal agency, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal office.

If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, and all types electric), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal laws and regulations. All attachments should be listed on this form, see item 33.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal office for specific instructions.

ITEM 17: Indicate which reported elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments.

ITEM 23: Show how reported top(s) of cement were determined, i.e. circulated (CIR), or calculated (CAL), or cement bond log (CBL), or temperature survey (TS).

#### PRIVACY ACT

The Privacy Act of 1974 and the regulation in 43 CFR 2.48 (d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 351 et seq., 25 U.S.C. et seq.; 43 CFR 3160.

PRINCIPAL PURPOSE: The information is to be used to evaluate the actual operations performed in the drilling, completing and testing of a well on a Federal or Indian lease.

ROUTINE USES: (1) Evaluate the equipment and procedures used during the drilling and completing/recompleting of a well. (2) The review of geologic zones and formation encountered during drilling. (3) Analyze future applications to drill in light of data obtained and methods used. (4)(5) Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this report and disclosure of the information is mandatory once a well drilled on a Federal or Indian lease is completed/recompleted.

The Paperwork Reduction Act of 1995 requires us to inform you that:

This information is being collected to allow evaluation of the technical, safety, and environmental factors involved with drilling and completing/recompleting wells on Federal and Indian oil and gas leases.

This information will be used to analyze operations and to compare equipment and procedures actually used with those proposed and approved.

Response to this request is mandatory only if the operator elects to initiate drilling and completing/recompleting operations on an oil and gas lease.

BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

#### BURDEN HOURS STATEMENT

Public reporting burden for this form is estimated to average 60 minutes per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Collection Clearance Officer, (WO-630), MS 401 LS, 1849 C Street, N.W., Washington, D.C. 20240.

CUNFIDENTIAL

## WOLVERINE GAS & OIL COPORATION

WOLVERINE FEDERAL #19-1 NE/NE SEC.19.T23S, R1W SEVIER CO., UT

> RECEIVED FEB 0 9 2006

THE PROPERTY SHEET IN

## GEOLOGIC REPORT

#### ON

## WOLVERINE FEDERAL #19-1 SE/NW SEC.19.T23S, R1W SEVIER CO., UT

#### **FOR**

## WOLVERINE GAS & OIL CORPORATION ONE RIVER FRONT PLAZA 55 CAMPAU NW GRAND RAPIDS, MI 49503-2616

## TABLE OF CONTENTS

Well Data Summary	1
Formation Tops	2
Formation Evaluation	3
Bit Record	4
Daily Drilling Summary	5
Deviation Surveys	6
Sample Descriptions	9

August 2005

Decollement Consulting, Inc Roger D. Charbonneau, B.Sc. Geologist



#### **WELL DATA SUMMARY**

WELL NAME WOLVERINE FEDERAL #19-1

OPERATOR WOLVERINE GAS & OIL CORP

BOTTOM HOLE LOCATION NE/NE SEC.19.T23S, R1W

SEVIER COUNTY, UT

API # 043 - 041 - 30033

WELL CLASSIFICATION DEVELOPMENT COVENANT

**FIELD** 

DRILLING CONTRACTOR UNIT #111

ELEVATION - GROUND LEVEL 5839'
KELLY BUSHING 5856'

**SPUD DATE** 6-30-05

SURFACE CASING 2448' OF 13 3/8"

INTERMEDIATE CASING 7060' OF 9 5/8"

PRODUCTION CASING 7858' OF 7"

HOLE SIZE 17 ½ ", 12 ¼", 8 ½

SAMPLE INTERVAL 2440 - 7858

**GAS DETECTION** 2466 - 7858

OPEN HOLE LOGS GR, SP, CAL, HRI, SD-DSN, DIP METER, EMRL

MUD TYPE SATURATED SALT, FLOZAN

WELL STATUS AWAITING COMPLETION

## **FORMATION TOPS**

Kelly Bushing 5753'

Formation Prog.(tvd) Spl. Top (md) Spl. Top(tvd) Log Top(md) Log Top(tvd) Sub Sea

Arapien	Surface					
Twin Creek	5563	6856	5750	6846	5741	115
Navajo	5931	7252	6129	7237	6109	-253
TD	7858					

#### FORMATION EVALUATION

## WOLVERINE GAS & OIL CORPORATION WOLVERINE FEDERAL #19-1 NE/NE SEC.19.T23S, R1W SEVIER COUNTY, UT

The Wolverine Federal #19-1 was the second well drill on the "B" pod (17-2 site), and the ninth well drilled in the Covenant Field. Decollement Consulting began sample coverage at 2470' on Unit Rig #111, on July 16,2005. Crews collected 30' samples to total depth. Surface casing (13 3/8") was set to 2448', and 12 ½" drilled to 7060'. Intermediate casing (9 5/8") was set at 7048' and 7" production casing was run to total depth (7858'). A full suite of logs was ran including dip meter and EMRL. Gas detection was ran from 2470' to 7858".

Navajo Sandstone 6109 TVD log -2530 Sub See.

The Navajo Sandstone was white, clear, light brown, light red orange, quartzose, fine grained (lower) to medium grained (upper), sub angular to rounded, fair to poor sorted, clay matrix, siliceous cement, 65 to 98% unconsolidated, friable, brown oil stain, strong hydrocarbon odor, rainbows, yellow gold residual ring cut, 10-14% intergranular porosity.

Conclusion: Oil saturated reservoir - awaiting completion.

## **BIT RECORD**

WELL NAME	<b>WOLVERINE FEDERAL #19-1</b>
VV D.I. II. IN ALIVIDA	*** • • • • • • • • • • • • • • • • • •

LOCATION NE/NE SEC. 19, T23S, R1W

SURFACE CASING 2448' OF 13 3/8

**SPUD DATE** 6-30-05

TD DATE 8-06-05

TD DATE		8-06-05					
ВІТ	1 (RR)	2(RR)	3(RR)	4	5		
SIZE	17 ½	17 ½	17 1/2	12 1/4	12 1/4		
MAKE	STC	STC	GTC	RTC	RTC		
TYPE	XRVC	MGSS2C	X7409	HP43A	HP53A		
SERIAL#	MR5481	<b>MJ38020</b>	802085	B73542	PB4480		
<b>JETS</b>	2X29, 1X22	4X29	4X28	3X24	3X24		
OUT @	1680	1945	2448	3738	4769		
FOOTAGE	1540	286	500	1289	1000		
HOURS	99 1/2	67 1/2	60 1/2	57	58 ½		
WT	6	45	45	35	35		
RPM	0/20	0/40	0/30	0/30	0/30		
PP	1600	1140	1250	1200	1500		
MUD WT	9.6	9.0	9.9	9.3	10.2		
VIS	37	38	37	31	32		
BIT	6	7	8	9			
SIZE	12 1/2	12 ½	8 ½	8 ½			
MAKE	Sec.	RTC	Sec.	RTC			
TYPE	EBX5205	HP53A	EBX5305	EHP53FK			
SERIAL#	10565860	PB4480	10709700	OR6170			
<b>JETS</b>	3X24	3X24	3/12	3X12			
OUT @	6494	7060	7065	7858			
FOOTAGE	1725	586	477	308			
HOURS	<b>7</b> 6	27	24 1/2	14.5			
WT	40	45	41	16			
RPM	0/34	0/30	0/30	0/30			
PP	1950	2050	1110	1145			
<b>MUD WT</b>	10.0	9.8	8.4	8.5			
VIS	32	36	35	35			

## **DAILY DRILLING SUMMARY**

DATE	DEPTH	PROG.	HRS	MUD	VIS	WL	PH	ACTIVITY
6-30-05	<b>271</b>	134	2 ½	9.0	28	NC	9.5	DRILL OUT
7-1-05	710	439	23 ½	9.0	28	NC	10.0	DRILL
7-2-05	1122	412	23 ½	9.5	32	NC	9.5	DRILL
7-3-05	1422	300	23 ½	9.5	32	NC	9.5	DRILL
7-4-05	1680	258	18 ½	9.9	36	NC	10.0	Drill, Trip Rig Repair
7-5-05	1760	80	13 ½	9.7	36	NC	10.5	RIH, DRILL
7-6-05	1819	59	12 ½	9.8	37	NC	10.0	DRILL, LOST CIRR
7-7-05	1819	NIL	NIL					Ream, Lost Crr,Spot LCM
7-8-05	1819	NIL	NIL					Biuld Vol, Spot LCM
7-9-05	1819	NIL	NIL					Biuld Vol, Ream & Wash
7-10-05	1872	53	20 ½	9.0	47	NC	10.0	REAM, DRILL
7-11-05	1945	<b>73</b>	23 ½	<b>8.</b> 7	<b>36</b>	NC	10.5	DRILL
7-12-05	2035	90	15	9.4	36	NC	11.0	TRIP BIT, DRILL
7-13-05	2235	200	23 ½	9.7	35	NC	9.0	DRILL
7-14-05	2435	200	23 ½	10.0	36	NC	10.5	DRILL
7-15-05	2448	13	1 ½	10.1	37	NC	10.5	DRILL, RUN 13 3/8"
7-16-05	2448	NIL	NIL					Nipple up
7-17-05	2671	223	3	8.7	27	NC	9.5	PRESS TEST, DRILL
7-18-05	3300	629	23 ½	9.4	29	NC	10.0	DRILL
7-19-05	3732	432	22 ½	9.8	29	NC	<b>7.5</b>	DRILL
7-20-05	3951	219	13	9.8	29	NC	8.5	Trip, Rig repair, Bit
7-21-05	4328	377	20 ½	9.8	29	NC	9.0	RIH, DRILL
7-22-05	4756	428	23 ½	10.0	31	NC	10.0	DRILL
7-23-05	5035	279	12 ½	9.9	33	NC	9.5	Drill,Trip Rig repair, Drill
7-24-05	5391	356	23 ½	10.0	34	NC	10.0	DRILL
7-25-05	5893	502	20 ½	10.0	34	NC	10.0	DRILL
7-26-05	6247	354	23 ½	10.0	33	NC	9.5	DRILL
7-27-05	6499	252	8 ½	10.0	32	NC	9.5	Drill, Trip Gamma
7-28-05	6499	NIL	NIL					RIH, Work tight hole, POOH
7-29-05	6540	41	1	9.9	34	NC	9.5	Ream, Drill, POOH, Motor
7-30-05	6981	341	18 ½	9.7	36	NC	10.0	RIH, DRILL
7-31-05	7065	84	6	9.8	36	NC	10.5	<b>DRILL, RUN 9 5/8"</b>
8-01-05	7065	NIL	NIL					Cement, Nipple up, Press test
8-02-05	7267	202	10 ½	<b>8.1</b>	31	7	8.5	RIH, DRILL
8-03-05	7542	275	20	8.4	32	6.5	9.0	Drill, Trip Motor/Bit
8-04-05	7802	60	12	8.5	30	5.5	9.0	RIH, DRILL, POOH
8-05-05	7850	48	2 ½	8.5	32	8.0	9.5	LOGGING, DRILL
8-06-05	7858	10	1/2	8.4	31	7.5	8.5	DRILL, POOH, RUN 7"

6

## **DEVIATION SURVEYS**

DEPTH	INCLINATION	DIRECTION
2380.00	39.00	323.90
2472.00	41.80	233.60
2566.00	42.90	233.10
2661.00	45.20	231.30
2755.00	44.60	230.60
2849.00	44.20	228.50
2849.00	44.20	228.50
2944.00	4340	228.10
3039.00	42.30	230.40
3133.00	44.10	231.10
3227.00	43.30	230.40
3322.00	42.20	230.10
3416.00	40.80	229.90
3416.00	40.80	229.90
3511.00	40.20	232.60
3605.00	41.10	240.50
3605.00	41.10	240.50
3707.00	40.80	242.20
3801.00	39.80	244.10
3896.00	39.80	242.90
3990.00	39.40	240.50
3990.00	39.40	240.50
4085.00	37.50	235.90
4179.00	37.10	232.60

DEPTH	INCLINATION	DIRECTION
4273.00	38.20	229.70
4367.00	38.30	229.60
4462.00	38.50	230.10
4556.00	38.50	231.10
4650.00	40.10	230.80
4744.00	40.30	230.40
4838.00	40.40	229.20
4933.00	40.60	229.70
5027.00	42.10	230.10
5122.00	41.20	229.70
5122.00	41.20	229.70
5216.00	39.80	227.80
5311.00	36.00	229.00
5405.00	30.90	233.30
5500.00	33.00	238.00
5594.00	34.00	239.60
5594.00	34.00	239.60
5689.00	36.10	238.50
5783.00	40.70	235.50
5878.00	40.80	233.40
5972.00	40.50	234.50
5972.00	40.50	234.50
6067.00	39,40	232.00
6160.00	36.10	228.10
6256.00	32.80	223.60
6350.00	31.10	223.80
6444.00	28.90	225.20
6444.00	28.90	225.20
6546.00	25.40	227.30
6640.00	23.60	229.70
6640.00	23.60	229.70
6735.00	22.70	232.00
6861.00	20.80	235.20
6962.00	19.90	234.70

DEPTH	INCLINATION	DIRECTION
7007.00	18.90	233.10
7095.00	17.90	231.30
7190.00	18.20	232.40
7284.00	17.20	225.70
7379.00	16.40	216.70
7379.00	16.40	216.70
7473.00	16.90	215.30
7568.00	16.20	208.50

#### SAMPLE DESCRIPIONS

## Wolverine Gas & Oil Corporation Wolverine Federal #19-1

2440-70	LIMESTONE 100% Light to medium gray, argillaceous, soft to firm, lithographic, mudstone.
2470-2500	LIMESTONE 100% Light to medium gray, argillaceous, soft to firm, lithographic, mudstone, 10% white, soft, chalky.
2500-30	LIMESTONE 100% Light to medium gray, argillaceous, soft to firm, lithographic, mudstone, 10% white, soft, chalky.
2530-60	LIMESTONE 100% Light to medium gray, argillaceous, earthy, mudstone, white, silty, sucrosic texture, crystalline, 70%.
2560-90	LIMESTONE 100% Light to medium gray, argillaceous, earthy, lithographic, mudstone, white, sucrosic, very fine to fine crystalline, 30% silty.
2590-2620	LIMESTONE 100% Light to medium gray, argillaceous, earthy, lithographic, mudstone.
2620-50	LIMESTONE 100% Light to medium gray, argillaceous, earthy, lithographic, mudstone, white, sucrosic, chalky, soft, 40%.
2650-80	LIMESTONE 100% Light to medium gray, argillaceous, firm to hard, crystalline in part, lithographic, mudstone, white, crystalline, calcite fracture in fill.
2680-2710	LIMESTONE 100% Light to medium gray, argillaceous, lithographic, mudstone, white, light gray, chalky, soft, silty.
2710-40	LIMESTONE 10% Light to medium gray, argillaceous, lithographic, mudstone, white,
	light gray, chalky, soft, silty. SANDSTONE 90% White, clear, quartzose, light red orange, very fine to medium grained, sub angular to rounded, fair to poor sorted, unconsolidated.
2740-70	SHALE 20% Red brown, silty, sandy, firm, blocky, slightly calcareous. SANDSTONE 80% White, clear, quartzose, light red orange, very fine to medium grained, sub angular to rounded, fair to poor sorted, unconsolidated.

CIMILLY YEAR

- 2770-2800 SANDSTONE 100% White, clear, quartzose, light red orange, very fine to medium grained, sub angular to rounded, fair to poor sorted, unconsolidated.
- SHALE 10% Red brown, silty, sandy, firm, slightly calcareous.

  SILTSTONE 20% Red brown, arenaceous, argillaceous, slightly calcareous, firm to hard.

  SANDSTONE 70% Unconsolidated.
- 2830-60 LIMESTONE 30% Light to medium gray, argillaceous, lithographic, mudstone.
  SHALE 20% Red brown, silty, sandy, firm, slightly calcareous.
  SILTSTONE 10% Red brown, arenaceous, argillaceous, slightly calcareous, firm to hard.
  SANDSTONE 40% Unconsolidated.
- 2860-90 SHALE 10% Red brown, silty, sandy, firm, slightly calcareous.

  LIMESTONE 50% Light to medium gray, argillaceous, lithographic, mudstone.

  SANDSTONE 40% Unconsolidated.
- 2890-2920 SHALE 10% Red brown, silty, sandy, blocky, firm, slightly calcareous.

  LIMESTONE 30% Light to medium gray, argillaceous, lithographic, mudstone.

  SANDSTONE 60% White, clear, quartzose, light red, very fine to medium grained, sub angular to rounded, fine to poor sorted, unconsolidated.
- 2920-50 SHALE 30% Red brown, silty, sandy, blocky, firm, slightly calcareous.
  SILTSTONE 40% Red brown, brown, arenaceous, firm, dolomitic.
  LIMESTONE 30% Light to medium gray, argillaceous, lithographic, mudstone.
- SHALE 30% Red brown, silty, blocky, firm, dolomitic, salt dissolution casts.

  SILTSTONE 10% Red brown, brown, arenaceous, firm, dolomitic.

  SANDSTONE 40% White, clear, quartzose, fine to medium grained, sub angular to rounded, fine to poor sorted, unconsolidated.

  LIMESTONE 20% Light to medium gray, argillaceous, earthy, lithographic, mudstone.
- 2980-3010 SHALE 30% Variable color, red brown, white, gray, brown, tan, blocky, firm, dolomitic, salt dissolution casts.

  SILTSTONE 10% White, arenaceous, argillaceous, blocky, dolomitic, anhydrite.

  SANDSTONE 30% White, clear, quartzose, fine to medium grained, sub angular to rounded, fine to poor sorted, unconsolidated.

  LIMESTONE 30% Light to medium gray, argillaceous, lithographic, mudstone.



3010-40	salt dissolution casts. SILTSTONE 20% White, arenaceous, argillaceous, blocky, dolomitic, anhydrite. SANDSTONE 50% White, clear, quartzose, fine to medium grained, sub angular to rounded, fine to poor sorted, unconsolidated.
3040-70	SHALE 20% Variable color, red brown, white, gray, brown, tan, blocky, firm, dolomitic salt dissolution casts. SILTSTONE 10% White, arenaceous, argillaceous, blocky, dolomitic, anhydrite. SANDSTONE 70% White, clear, quartzose, fine to medium grained, sub angular to rounded, fine to poor sorted, unconsolidated.
3070-3100	SHALE 20% Variable color, red brown, white, gray, brown, tan, blocky, firm, dolomitic salt dissolution casts. SILTSTONE 10% White, arenaceous, argillaceous, blocky, dolomitic, anhydritic. LIMESTONE 20% Light gray, crystalline, dense, lithographic, mudstone.
3100-30	SHALE 30% Red brown, blocky, firm, dolomitic. LIMESTONE 70% Light to medium gray, argillaceous, earthy, lithographic, mudstone.
3130-60	SHALE 10% Red brown, blocky, firm, dolomitic, abundant salt dissolution casts. LIMESTONE 90% Light to medium gray, argillaceous, earthy, lithographic, mudstone.
3160-90	LIMESTONE 100% Light to medium gray, argillaceous, earthy, lithographic, mudstone abundant potash, salt dissolution casts.
3190-3220	SHALE 20% Red brown, silty, blocky, firm, dolomitic abundant salt casts. LIMESTONE 80% Light to medium gray, argillaceous, earthy, lithographic, mudstone, abundant, potash, salt dissolution casts.
3220-50	SANDSTONE 100% White, clear, quartzose, light red orange, fine to medium grained, sub angular to rounded, fine to poor sorted, unconsolidated.
3250-80	SHALE 100% Red brown, silty, soft to firm, dolomitic, white, waxy, smooth.
3280-3310	SHALE 80% Red brown, silty, soft to firm, dolomitic, white, waxy, smooth. SANDSTONE 20% White, clear, quartzose, light red orange, fine to medium grained, sub angular to rounded, fine to poor sorted, unconsolidated.
3310-40	SANDSTONE 100% White, quartzose, light red orange, fine to medium grained, sub angular to rounded, fine to poor sorted, unconsolidated.

- 3340-70 SHALE 20% Red brown, silty, soft to firm, dolomitic, white, waxy, smooth. SANDSTONE 80% White, clear, quartzose, light red orange, fine to medium grained, sub angular to rounded, fair to poor sorted, unconsolidated.
- 3370-3400 SHALE 30% Red brown, silty, soft to firm, dolomitic, white, waxy, smooth. SANDSTONE 70% White, clear, quartzose, light red orange, fine to medium grained, sub angular to rounded, fair to poor sorted, unconsolidated.
- 3400-30 SHALE 10% Red brown, silty, soft to firm, dolomitic, white, waxy, smooth.

  LIMESTONE 90% Light to medium gray, argillaceous, earthy, soft to firm, lithographic, mudstone.
- 3430-60 SHALE 10% Red brown, silty, soft to firm, dolomitic, white, waxy, smooth.

  LIMESTONE 90% Light to medium gray, argillaceous, earthy, soft to firm, lithographic, mudstone.
- 3460-90 SHALE 20% Red brown, blocky, dolomitic, firm.
  LIMESTONE 50% Light to medium gray, argillaceous, earthy, soft to firm, lithographic, mudstone.
  ANHYDRITE 30% White, crystalline, chalky, soft to firm.
- 3490-20 SHALE 10% Red brown, blocky, dolomitic, firm.
  LIMESTONE 70% Light to medium gray, argillaceous, earthy, soft to firm, lithographic, mudstone.
  ANHYDRITE 20% White, crystalline, chalky, soft to firm.
- 3520-50 SHALE 20% Red brown, dolomitic, silty, blocky, firm.
  LIMESTONE 40% Light to medium gray, argillaceous, chalky, lithographic, mudstone.
  ANHYDRITE 40% White, clear, translucent, crystalline, sucrosic texture, chalky in part, firm.
- 3550-80 SHALE 30% Red brown, dolomitic, silty, blocky, firm.

  LIMESTONE 40% Light to medium gray, argillaceous, chalky, lithographic, mudstone.

  ANHYDRITE 30% White, clear, translucent, crystalline, sucrosic texture, chalky in part, firm.
- 3580-3610 SHALE 30% Red brown, dolomitic, silty, blocky, firm, abundant salt casts.

  LIMESTONE 30% Light to medium gray, argillaceous, chalky, lithographic, mudstone.

  ANHYDRITE 40% White, clear, translucent, crystalline, sucrosic texture, chalky in part, firm.

- 3610-40 SHALE 10% Red brown, dolomitic, silty, blocky, firm, abundant salt casts.

  LIMESTONE 70% Light to medium gray, argillaceous, chalky, lithographic, mudstone.

  ANHYDRITE 20% White, clear, translucent, crystalline, sucrosic texture, chalky in part, firm.
- 3640-70 SHALE 10% Red brown, dolomitic, silty, blocky, firm, abundant salt casts.
  LIMESTONE 90% Light to medium gray, argillaceous, chalky, lithographic, mudstone.
- 3670-3700 LIMESTONE 100% Light to medium gray, argillaceous, earthy, lithographic, mudstone, white, soft, chalky, abundant white anhydrite fracture fill.
- LIMESTONE 100% Light to medium gray, argillaceous, earthy, lithographic, mudstone, white, soft, chalky, abundant white anhydrite fracture fill.
- 3730-60 SHALE 40% Red brown, soft to firm, earthy, floating quartz grains, silty.

  ANHYDRITE 20% White, sucrosic, crystalline, chalky.

  LIMESTONE 40% Light to medium gray, argillaceous, earthy, lithographic, mudstone, white, soft, chalky, abundant white anhydrite fracture fill.
- SHALE 10% Red brown, silty, blocky, firm, dolomitic, abundant white chalky anhydrite. LIMESTONE 10% Light to medium gray, argillaceous, lithographic, mudstone. SANDSTONE 80% White, clear, quartzose, light red, fine to medium grained, sub angular to rounded, fair to poor sorted, unconsolidated.
- 3790-3820 SHALE 10% Red brown, silty, blocky, firm, dolomitic, abundant white chalky anhydrite. SILTSTONE 10% Red brown, arenaceous, argillaceous, firm to hard, dolomitic. SANDSTONE 80% White, clear, quartzose, light red, fine to medium grained, sub angular to rounded, fair to poor sorted, unconsolidated.
- SHALE 20% Red brown, silty, blocky, firm, dolomitic, abundant white chalky anhydrite. SILTSTONE 20% Red brown, arenaceous, argillaceous, firm to hard, dolomitic. LIMESTONE 10% Light to medium gray, silty in part, argillaceous, mudstone. SANDSTONE 50% White, clear, quartzose, light red, fine to medium grained, sub angular to rounded, fair to poor sorted, unconsolidated.
- 3850-80 SILTSTONE 20% Red brown, arenaceous, argillaceous, firm to hard, dolomitic. LIMESTONE 90% Light to medium gray, silty in part, argillaceous, lithographic, mudstone, white, soft, chalky in part.
- 3880-3910 LIMESTONE 100% Light to medium gray, silty in part, argillaceous, lithographic, mudstone, white, soft, chalky in part.

3910-40

4180-4210

LIMESTONE 100% Light to medium gray, silty in part, argillaceous, lithographic, mudstone, white, soft, chalky in part. SHALE 20% Red brown, silty, blocky, firm, dolomitic, abundant white chalky anhydrite, 3940-70 red brown, light gray white, blocky, firm, dolomitic. LIMESTONE 10% Light to medium gray, silty in part, argillaceous, lithographic, mudstone, white, soft, chalky in part. SANDSTONE 70% White, clear, quartzose, fine to medium grained, sub angular to rounded, fair to poor sorted, unconsolidated. 3970-4000 SHALE 70% Red brown, silty, blocky, firm, dolomitic, abundant white chalky anhydrite, red brown, light gray white, blocky, firm, dolomitic. LIMESTONE 20% Light to medium gray, silty in part, argillaceous, lithographic, mudstone, white, soft, chalky in part. SANDSTONE 10% White, clear, quartzose, fine to medium grained, sub angular to rounded, fair to poor sorted, unconsolidated. 4000-30 SHALE 70% Red brown, tan, white, brown, blocky, soft to firm, chalky, silty, dolomitic. LIMESTONE 30% Light to medium gray, argillaceous, lithographic, mudstone. SHALE 60% Red brown, tan, white, brown, blocky, soft to firm, chalky, silty, dolomitic. 4030-60 LIMESTONE 40% Light to medium gray, argillaceous, lithographic, mudstone. 4060-90 SHALE 20% Red brown, white, gray, soft to firm, silty, blocky, dolomitic. LIMESTONE 60% Light gray, white, soft to firm, chalky, lithographic, mudstone. ANHYDRITE 20% White, soft, chalky. 4090-4120 SHALE 20% Red brown, brown, silty, sandy, blocky, firm, dolomitic. LIMESTONE 80% Light gray, white, chalky, soft to firm, lithographic, mudstone. 4120-50 SHALE 10% Red brown, brown, silty, sandy, blocky, firm, dolomitic. LIMESTONE 90% Light gray, white, chalky, soft to firm, lithographic, mudstone. 4150-80 SHALE 10% Red brown, brown, silty, sandy, blocky, firm, dolomitic.

4210-40 LIMESTONE 100% Light to medium gray, crystalline, argillaceous, lithographic, mudstone, abundant anhydrite fracture in fill.

mudstone, abundant anhydrite fracture in fill.

LIMESTONE 90% Light to medium gray, crystalline, argillaceous, lithographic, mudstone.

LIMESTONE 100% Light to medium gray, crystalline, argillaceous, lithographic,

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- 4240-70 LIMESTONE 100% Light to medium gray, crystalline, firm to hard, lithographic, mudstone, white, chalky, soft, abundant anhydrite fracture fill.
- 4270-4300 LIMESTONE 100% Light to medium gray, crystalline, firm to hard, lithographic, mudstone, white, soft, chalky, becoming filled with fine to medium grained rounded quarts grains.
- 4300-30 SHALE 20% Red brown, brown, silty, sandy, soft to firm.

  LIMESTONE 50% Light to medium gray, gray brown, argillaceous, chalky, crystalline, lithographic, mudstone.

  ANHYDRITE 30% White, silty, sandy, chalky, soft.
- 4330-60 SHALE 10% Red brown, brown, silty, sandy, soft to firm.

  LIMESTONE 70% Light to medium gray, gray brown, argillaceous, chalky, crystalline, lithographic, mudstone.

  ANHYDRITE 20% White, silty, sandy, chalky, soft.
- SHALE 10% Red brown, brown, silty, sandy, soft to firm.

  LIMESTONE 60% Light to medium gray, gray brown, argillaceous, chalky, crystalline, lithographic, mudstone.

  ANHYDRITE 30% White, silty, sandy, chalky, soft.
- 4390-4420 SHALE 10% Red brown, brown, silty, sandy, soft to firm.

  LIMESTONE 70% Light to medium gray, gray brown, argillaceous, chalky, crystalline, lithographic, mudstone.

  ANHYDRITE 20% White, silty, sandy, chalky, soft.
- 4420-50 LIMESTONE 100% Light to medium gray, silty, argillaceous, lithographic, mudstone.
- 4450-80 LIMESTONE 100% Light to medium gray, silty, argillaceous, lithographic, mudstone.
- 4480-4510 LIMESTONE 100% Light to medium gray, firm, chalky in part, silty, argillaceous, lithographic, mudstone.
- 4510-40 SHALE 10% Red brown, silty, blocky, dolomitic.
  LIMESTONE 90% Light to medium gray, firm, chalky in part, silty, argillaceous, lithographic, mudstone.

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- SHALE 10% Red brown, silty, blocky, dolomitic.

  LIMESTONE 20% Light to medium gray, firm, chalky in part, silty, argillaceous, lithographic, mudstone.

  SANDSTONE 70% White, clear, quartzose, fine to medium grained, sub angular to rounded, fair to poor sorted, unconsolidated.
- 4570-4600 SHALE 30% Light brown, red brown, tan, silty, sandy, dolomitic, abundant potash, salt casts.

  LIMESTONE 30% Light to medium gray, argillaceous, lithographic, mudstone.

  SANDSTONE 40% White, clear, quartzose, fine to coarse granulated, sub angular to rounded, fair to poor sorted, unconsolidated.
- SHALE 30% Light brown, red brown, tan, silty, sandy, dolomitic, abundant potash, salt casts.

  LIMESTONE 40% Light to medium gray, argillaceous, lithographic, mudstone.

  SANDSTONE 20% White, clear, quartzose, fine to coarse granulated, sub angular to rounded, fair to poor sorted, unconsolidated.

  ANHYDRITE 10% White, soft, chalky.
- SHALE 10% Light brown, red brown, tan, silty, sandy, dolomitic.

  LIMESTONE 20% Light to medium gray, argillaceous, lithographic, mudstone.

  SANDSTONE 70% White, clear, quartzose, fine to coarse granulated, sub angular to rounded, fair to poor sorted, unconsolidated.
- SHALE 20% Light brown, red brown, tan, silty, sandy, dolomitic.

  LIMESTONE 40% Light to medium gray, argillaceous, lithographic, mudstone.

  SANDSTONE 40% White, clear, quartzose, fine to coarse granulated, sub angular to rounded, fair to poor sorted, unconsolidated.
- 4690-4720 SHALE 10% Red brown, silty, blocky, dolomitic, red orange, potash, brown, arenaceous, dolomitic.

  LIMESTONE 90% Light to medium gray, argillaceous, lithographic, mudstone.
- 4720-50 SANDSTONE 40% White, clear, quartzose, very fine to medium grained, sub angular to rounded, fair to poor sorted, unconsolidated.

  LIMESTONE 50% Light to medium gray, argillaceous, lithographic, mudstone.

  ANHYDRITE 10% White, clear, chalky.

4750-80 SHALE 40% Red brown, tan, white, silty, blocky, dolomitic, abundant potash, salt casts. LIMESTONE 30% Light to medium gray, crystalline, dense, argillaceous, lithographic, mudstone. SANDSTONE 30% White, clear, quartzose, very fine to medium grained, sub angular to rounded, fair to poor sorted, unconsolidated. SHALE 40% Red brown, silty, blocky, dolomitic, earthy. 4780-4810 LIMESTONE 60% Light to medium grav, soft, chalky, argillaceous, lithographic, mudstone. 4810-40 SHALE 30% Red brown, silty, blocky, dolomitic, earthy, abundant potash, salt casts. LIMESTONE 70% Light to medium gray, soft, chalky, argillaceous, lithographic, mudstone. 4840-4870 SHALE 30% Red brown, brown, silty, sandy, blocky, firm, dolomitic. LIMESTONE 50% Light to medium gray, argillaceous, lithographic, mudstone. ANHYDRITE 20% White, chalky, soft, sandy, silty. 4870-4900 SHALE 40% Red brown, brown, silty, sandy, blocky, firm, dolomitic. LIMESTONE 50% Light to medium gray, argillaceous, lithographic, mudstone. ANHYDRITE 10% White, chalky, soft, sandy, silty. 4900-30 SHALE 10% Red brown, brown, silty, sandy, blocky, firm, dolomitic. LIMESTONE 80% Light to medium gray, argillaceous, lithographic, mudstone. ANHYDRITE 10% White, chalky, soft, sandy, silty. 4930-60 SHALE 10% Red brown, brown, silty, sandy, blocky, firm, dolomitic. LIMESTONE 90% Light to medium gray, argillaceous, lithographic, mudstone. SHALE 10% Red brown, brown, silty, sandy, blocky, firm, dolomitic. 4960-90 LIMESTONE 90% Light to medium gray, argillaceous, lithographic, mudstone.

5050-80 LIMESTONE 100% Light to medium gray, argillaceous, lithographic, mudstone, white, chalky, soft.

LIMESTONE 100% Light to medium gray, argillaceous, lithographic, mudstone, white,

LIMESTONE 100% Light to medium gray, argillaceous, lithographic, mudstone, white,

4990-5020

5020-50

chalky, soft.

chalky, soft.

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5080-5110

chalky, 30%.

LIMESTONE 100% Light to medium gray, argillaceous, lithographic, mudstone, white,

chalky, soft. LIMESTONE 100% Light to medium gray, argillaceous, lithographic, mudstone, white, 5110-40 chalky, soft. 5140-70 LIMESTONE 90% Light to medium gray, argillaceous, lithographic, mudstone, white, soft, ANHYDRITE 10% White, soft, chkky. LIMESTONE 80% Light to medium gray, argillaceous, lithographic, mudstone, white, soft, 5170-5200 chalky. ANHYDRITE 20% White, soft, chalky, silty. 5200-30 LIMESTONE 100% Light to medium gray, argillaceous, lithographic, mudstone, white, soft, chalky. LIMESTONE 100% Light to medium gray, argillaceous, lithographic, mudstone, white, 5230-60 soft, chalky. 5260-90 LIMESTONE 100% Light to medium gray, white, argillaceous, chalky, lithographic, mudstone. 5290-5320 SHALE 10% Red brown, silty, blocky, firm, dolomitic. LIMESTONE 70% Light to medium gray, argillaceous, lithographic, mudstone, white, soft, chalky. ANHYDRITE 20% White, soft, chalky. 5320-50 SHALE 10% Red brown, silty, blocky, firm, dolomitic. LIMESTONE 90% Light to medium gray, argillaceous, lithographic, mudstone, white, 10% soft, chalky. SHALE 10% Red brown, silty, blocky, firm, dolomitic, abundant salt casts. 5350-80 LIMESTONE 90% Light to medium gray, argillaceous, lithographic, mudstone, white, 10% soft, chalky. SHALE 10% Red brown, silty, blocky, dolomitic. 5380-5410

LIMESTONE 90% Light to medium gray, argillaceous, lithographic, mudstone, white, soft,

- 5410-40 SHALE 10% Red brown, silty, blocky, dolomitic.
  LIMESTONE 90% Light to medium gray, argillaceous, lithographic, mudstone, white, soft, chalky, 30%.
- 5440-70 SHALE 10% Red brown, silty, sandy, dolomitic, blocky, firm, abundant salt casts.

  LIMESTONE 90% Light to medium gray, argillaceous, lithographic, mudstone, white, soft, chalky, silty 20%.
- 5470-5500 SHALE 10% Red brown, silty, sandy, dolomitic, blocky, firm, abundant salt casts. LIMESTONE 90% Light to medium gray, argillaceous, lithographic, mudstone, white, soft, chalky, silty 20%.
- 5500-30 SHALE 10% Red brown, silty, sandy, dolomitic, blocky, firm, abundant salt casts. LIMESTONE 90% Light to medium gray brown, crystalline, dense, argillaceous, lithographic, mudstone.
- 5530-60 SHALE 10% Red brown, silty, sandy, dolomitic, blocky, firm, abundant salt casts. LIMESTONE 90% Light to medium gray brown, crystalline, dense, argillaceous, lithographic, mudstone.
- SHALE 10% Red brown, silty, sandy, dolomitic, blocky, firm, abundant salt casts. LIMESTONE 60% Light to medium gray brown, crystalline, dense, argillaceous, lithographic, mudstone.

  ANHYDRITE 10% White, soft, chalky.
- 5620-50 SHALE 20% Red brown, silty, sandy, dolomitic, blocky, firm, abundant salt casts. LIMESTONE 70% Light to medium gray brown, crystalline, dense, argillaceous, lithographic, mudstone.
  ANHYDRITE 10% White, soft, chalky.
- SHALE 10% Red brown, soft to firm, silty, earthy, dolomitic, salt casts.

  LIMESTONE 70% Light to medium gray, argillaceous, lithographic, mudstone, white, soft, chalky.

  ANHYDRITE 20% White, chalky, soft, silty.
- 5680-5710 SHALE 10% Red brown, soft to firm, silty, earthy, dolomitic, salt casts.

  LIMESTONE 90% Light to medium gray, argillaceous, lithographic, mudstone, white, soft, chalky, abundant white, chalky, anhydrite fracture in fill.
- 5710-40 LIMESTONE 100% Light to medium gray, argillaceous, crystalline, lithographic, mudstone.

- 5740-70 LIMESTONE 100% Light to medium gray, argillaceous, crystalline, lithographic, mudstone.
- 5770-5800 SHALE 10% Red brown, silty, blocky, dolomitic, abundant salt casts.

  LIMESTONE 80% Light to medium gray, argillaceous, crystalline, lithographic, mudstone, micropyritic in part.

  ANHYDRITE 10% White, chalky, crystalline, sucrosic.
- 5800-30 SHALE 20% Red brown, gray green, blocky, silty, smooth, waxy, firm, dolomitic. LIMESTONE 60% Light to medium gray, argillaceous, lithographic, mudstone. ANHYDRITE 20% White, chalky, silty, sandy, soft to firm.
- 5830-60 SHALE 30% Variable color, red brown, brown, tan, gray green, blocky, firm, dolomitic, smooth.

  LIMESTONE 60% Light to medium gray, argillaceous, lithographic, mudstone.

  ANHYDRITE 10% White, soft, chalky, silty.
- 5860-90 SHALE 10% Variable color, red brown, brown, tan, gray green, blocky, firm, dolomitic, smooth.

  LIMESTONE 90% Light to medium gray, argillaceous, lithographic, mudstone.
- 5890-5920 SHALE 10% Red brown, soft to firm, dolomitic, blocky, abundant salt casts. LIMESTONE 80% Light to medium gray, argillaceous, lithographic, mudstone. ANHYDRITE 10% White, soft, chalky.
- 5920-50 SHALE 10% Red brown, blocky, dolomitic, firm.
  LIMESTONE 90% Light to medium gray, argillaceous, lithographic, mudstone.
- 5950-80 LIMESTONE 100% Light to medium gray, argillaceous, lithographic, mudstone, abundant anhydrite fracture in fill.
- 5980-6010 SHALE 10% Red brown, gray green, blocky, firm, smooth.

  LIMESTONE 90% Light to medium gray, argillaceous, lithographic, mudstone, white, soft, chalky.
- 6010-40 SHALE 10% Red brown, gray green, blocky, firm, smooth.

  LIMESTONE 90% Light to medium gray, argillaceous, lithographic, mudstone, white, soft, chalky.
- 6040-70 LIMESTONE 100% Light to medium gray, argillaceous, lithographic, mudstone, white, soft, chalky in part, abundant white crystalline anhydrite fracture in fill.

6070-6100 LIMESTONE 100% Light to medium gray, argillaceous, lithographic, mudstone, white, soft, chalky in part abundant white, crystalline, anhydrite fracture in fill. 6100-30 LIMESTONE 100% Light to medium gray, argillaceous, lithographic, mudstone, 10% white, soft, chalky in part abundant white, crystalline, anhydrite fracture in fill. 6130-60 LIMESTONE 100% Light to medium gray brown, crystalline, dense, argillaceous, lithographic, mudstone, 10% white, soft, chalky. 6160-90 LIMESTONE 100% Light to medium gray brown, crystalline, dense, argillaceous, lithographic, mudstone, 10% white, soft, chalky. 6190-6220 LIMESTONE 100% Light to medium gray brown, crystalline, dense, argillaceous, lithographic, mudstone, 10% white, soft, chalky. 6220-50 LIMESTONE 100% Light to medium gray brown, crystalline, dense, argillaceous, lithographic, mudstone, 10% white, soft, chalky. 6250-80 LIMESTONE 100% Light to medium gray brown, crystalline, dense, argillaceous, lithographic, mudstone, 10% white, soft, chalky. 6280-6310 LIMESTONE 100% Light to medium gray brown, crystalline, dense, firm to hard, argillaceous, mudstone, abundant red brown, silty, shale, abundant anhydrite, abundant salt casts. 6310-40 SHALE 10% Red brown, silty, sandy, dolomitic, blocky, firm to hard. LIMESTONE 90% Light to medium gray brown, crystalline, dense, firm to hard, argillaceous, mudstone, abundant red brown, silty, shale, abundant anhydrite, abundant salt casts. 6340-70 SHALE 10% Red brown, silty, sandy, dolomitic, blocky, firm to hard. LIMESTONE 90% Light to medium gray brown, crystalline, dense, firm to hard, argillaceous, mudstone, abundant red brown, silty, shale, abundant anhydrite, abundant salt casts. SHALE 10% Red brown, silty, sandy, dolomitic, blocky, firm to hard. 6370-6400

LIMESTONE 90% Light to medium gray brown, crystalline, dense, firm to hard,

salt casts.

argillaceous, mudstone, abundant red brown, silty, shale, abundant anhydrite, abundant

- SHALE 20% Red brown, silty, sandy, dolomitic, blocky, firm to hard.

  LIMESTONE 80% Light to medium gray brown, crystalline, dense, firm to hard,

  argillaceous, mudstone, abundant red brown, silty, shale, abundant anhydrite, abundant salt casts.
- SHALE 30% Red brown, silty, sandy, dolomitic, blocky, firm to hard.
  LIMESTONE 70% Light to medium gray brown, crystalline, dense, firm to hard,
  argillaceous, mudstone, abundant red brown, silty, shale, abundant anhydrite, abundant salt casts.
- SHALE 20% Red brown, silty, sandy, dolomitic, blocky, firm to hard.

  LIMESTONE 80% Light to medium gray brown, crystalline, dense, firm to hard, argillaceous, mudstone, abundant red brown, silty, shale, abundant anhydrite, abundant salt casts.
- 6490-6520 SHALE 40% Variable color, red brown, gray green, tan, white, blocky, waxy, firm, dolomitic.

  LIMESTONE 60% Light to medium gray, crystalline, dense, argillaceous, lithographic, mudstone.
- 6520-50 SHALE 50% Variable color, red brown, gray green, tan, white, blocky, waxy, firm, dolomitic.

  LIMESTONE 50% Light to medium gray, crystalline, dense, argillaceous, lithographic, mudstone.
- 6550-80 SHALE 60% Variable color, red brown, gray green, tan, white, blocky, waxy, firm, dolomitic.

  LIMESTONE 40% Light to medium gray, crystalline, dense, argillaceous, lithographic, mudstone.
- 6580-6610 SHALE 50% Red brown, gray, gray green, tan, white, blocky, silty, firm, dolomitic. LIMESTONE 50% Light to medium gray, crystalline, dense, argillaceous, lithographic, mudstone.
- SHALE 30% Red brown, gray, gray green, tan, white, blocky, silty, firm, dolomitic.

  LIMESTONE 30% Light to medium gray, crystalline, dense, argillaceous, lithographic, mudstone.

  SANDSTONE 40% White, clear, quartzose, fine to medium grained, sub angular to rounded, fair to poor sorted, unconsolidated.

- SHALE 30% Red brown, gray, gray green, tan, white, blocky, silty, firm, dolomitic.

  LIMESTONE 30% Light to medium gray, crystalline, dense, argillaceous, lithographic, mudstone.

  SANDSTONE 40% White, clear, quartzose, fine to medium grained, sub angular to rounded, fair to poor sorted, unconsolidated.
- 6670-6700 SHALE 40% Red brown, gray, gray green, tan, white, blocky, silty, firm, dolomitic. LIMESTONE 60% Light to medium gray, crystalline, dense, argillaceous, lithographic, mudstone.
- SHALE 30% Red brown, gray, gray green, tan, white, blocky, silty, firm, dolomitic.

  LIMESTONE 50% Light to medium gray, crystalline, dense, argillaceous, lithographic, mudstone.

  SANDSTONE 20% White, clear, quartzose, fine to medium grained, sub angular to rounded, fair to poor sorted, unconsolidated.
- 6730-60 SHALE 40% Red brown, gray, gray green, tan, white, blocky, silty, firm, dolomitic.

  LIMESTONE 50% Light to medium gray, crystalline, dense, argillaceous, lithographic, mudstone.

  SANDSTONE 10% White, clear, quartzose, fine to medium grained, sub angular to rounded, fair to poor sorted, unconsolidated.
- 6760-90 SHALE 20% Red brown, gray, gray green, tan, white, blocky, silty, firm, dolomitic.

  LIMESTONE 40% Light to medium gray, crystalline, dense, argillaceous, lithographic, mudstone.

  SANDSTONE 40% White, clear, quartzose, fine to medium grained, sub angular to rounded, fair to poor sorted, unconsolidated.
- 6790-6820 SHALE 20% Red brown, gray, gray green, tan, white, blocky, silty, firm, dolomitic. LIMESTONE 20% Light to medium gray, crystalline, dense, argillaceous, lithographic, mudstone.

  SANDSTONE 60% White, clear, quartzose, fine to medium grained, sub angular to rounded, fair to poor sorted, unconsolidated.
- 6820-50 SHALE 50% Red brown, silty, blocky, dolomitic, firm.
  SILTSTONE 30% Red brown, argillaceous, arenaceous, dolomitic, firm.
  LIMESTONE 20% Light to medium gray, argillaceous, lithographic, mudstone.
- 6850-80 SHALE 10% Red brown, silty, blocky, dolomitic, firm.
  LIMESTONE 90% Light to medium gray brown, tan, light brown, dense, microcrystalline, red, tight, mudstone.

- 6880-6910 LIMESTONE 100% Light to medium gray brown, tan, light brown, mottled, crystalline, dense, hard, mudstone, mottled in part.
- 6910-40 LIMESTONE 100% Light gray brown, tan, microcrystalline, dense, hard, tight.
- 6940-70 LIMESTONE 100% Light gray brown, tan, microcrystalline, dense, hard, tight, becoming wackestone to grainstone, pellets, abundant oolites, mottled, mudstone matrix, hard, tight, no show.
- 6970-7000 LIMESTONE 100% Light gray brown, tan, micro crystalline, dense, hard, tight, becoming wackestone to grainstone, pellets, abundant oolites, mottled, mudstone matrix, hard, tight, light gray to white, mottled, oolitic.
- 7000-30 LIMESTONE 100% Medium to dark gray brown, crystalline, dense, argillaceous, lithographic, mudstone, light gray, white, mottled, chalky, mudstone.
- 7030-60 LIMESTONE 100% Medium to dark gray brown, crystalline, dense, argillaceous, lithographic, mudstone, light gray, white, mottled, chalky, mudstone.
- 7060-90 LIMESTONE 100% Medium to dark gray brown, crystalline, dense, argillaceous, lithographic, mudstone, light gray, white, mottled, chalky, mudstone.
- 7090-7120 LIMESTONE 100% Light gray brown, tan, mottled, pellets, oolitic, packstone to grainstone, mudstone matrix, very fine to fine crystalline, sucrosic texture in part, tight, no show.
- 7120-50 LIMESTONE 100% Light to medium gray brown, crystalline, dense, mudstone.
- 7150-80 LIMESTONE 100% Light to medium gray brown, crystalline, dense, mudstone, abundant white, crystalline, calcite, fracture fill.
- 7180-7210 LIMESTONE 100% Light to medium gray brown, tan, light gray to white, mottled, very fine to fine crystalline, sucrosic texture, abundant white, clear, crystalline, calcite, fracture in fill, yellow to white fluorescence, no show.

- T210-40 LIMESTONE 30% Light to medium gray brown, tan, light gray to white, mottled, very fine to fine crystalline, sucrosic texture, abundant white, clear, crystalline, calcite, fracture in fill, yellow to white fluorescence, no show.

  SANDSTONE 70% White, clear, quartzose, light red orange, pink, very fine to coarse grained, sub angular to rounded, fair to poor sorted, clay matrix, siliceous cement, friable, 6-8% intrgranular porosity, 20% unconsolidated, yellow to white oil fluorescence, brown oil stain in pores, yellow to white milky cut fluorescence, yellow gold residual ring.
- SANDSTONE 100% White, clear, quartzose, light red orange, pink, very fine to medium grained, sub angular to rounded, fair to poor sorted, clay matrix, siliceous cement, friable, 95% unconsolidated, strong hydrocarbon odor, rainbow on wash water, yellow to white oil fluorescence, brown oil stain in pores, yellow to white milky cut fluorescence, yellow gold residual ring, 10-14% intrgranular porosity.
- 7270-7300 SANDSTONE 100% White, clear, quartzose, light red orange, pink, very fine to coarse grained, sub angular to rounded, fair to poor sorted, clay matrix, siliceous cement, friable, 90% unconsolidated, strong hydrocarbon odor, rainbow on wash water, yellow to white oil fluorescence, brown oil stain in pores, yellow to white milky cut fluorescence, yellow gold residual ring, 10-14% intrgranular porosity.
- SANDSTONE 100% White, clear, quartzose, light red orange, pink, very fine to coarse grained, sub angular to rounded, fair to poor sorted, clay matrix, siliceous cement, friable, 85% unconsolidated, strong hydrocarbon odor, rainbow on wash water, yellow to white oil fluorescence, brown oil stain in pores, yellow to white milky cut fluorescence, yellow gold residual ring, 10-14% intrgranular porosity.
- 7330-60 SANDSTONE 100% White, clear, quartzose, light red orange, pink, very fine to coarse grained, sub angular to rounded, fair to poor sorted, clay matrix, siliceous cement, friable, 98% unconsolidated, strong hydro carbon odor, rainbow on wash water, yellow to white oil fluorescence, brown oil stain in pores, yellow to white milky cut fluorescence, yellow gold residual ring, 10-14% intrgranular porosity.
- SANDSTONE 100% White, clear, quartzose, light red orange, pink, very fine to coarse grained, sub angular to rounded, fair to poor sorted, clay matrix, siliceous cement, friable, 95% unconsolidated, strong hydrocarbon odor, rainbow on wash water, yellow to white oil fluorescence, brown oil stain in pores, yellow to white milky cut fluorescence, yellow gold residual ring, 10-14% intrgranular porosity.

- 7390-7420 SANDSTONE 100% White, clear, quartzose, light red orange, pink, very fine to medium grained, sub angular to rounded, fair to poor sorted, clay matrix, siliceous cement, friable, 98% unconsolidated, strong hydrocarbon odor, rainbow on wash water, yellow to white oil fluorescence, brown oil stain in pores, yellow to white milky cut fluorescence, yellow gold residual ring, 10-14% intrgranular porosity.
- SANDSTONE 100% White, clear, quartzose, light red orange, pink, very fine to medium grained, sub angular to rounded, fair to poor sorted, clay matrix, siliceous cement, friable, 70% unconsolidated, abundant white, silty anhydrite, strong hydrocarbon odor, rainbow on wash water, yellow to white oil fluorescence, brown oil stain in pores, yellow to white milky cement fluorescence, yellow gold residual ring, 10-14% intrgranular porosity.
- SANDSTONE 100% White, clear, quartzose, light red orange, pink, very fine to medium grained, sub angular to rounded, fair to poor sorted, clay matrix, siliceous cement, friable, 60% unconsolidated, abundant white, silty anhydrite, strong hydro carbon odor, rainbow on wash water, yellow to white oil fluorescence, brown oil stain in pores, yellow to white milky cement fluorescence, yellow gold residual ring, 10-14% intrgranular porosity.
- 7480-7510 SHALE 20% Red brown, blocky, red, silty, firm to hard, dolomitic. SILTSTONE 50% Red brown, red, arenaceous, argillaceous, blocky, firm to hard. SANDSTONE 20% White, clear, quartzose, fine to medium grained, sub angular to rounded fair to poor sorted, unconsolidated. ANHYDRITE 10% White, chalky, soft to firm.
- SHALE 10% Red brown, brick red, silty, firm to hard, dolmitic.

  SILTSTONE 60% Red brown, brick red, arenaceous, argillaceous, blocky, firm to hard.

  SANDSTONE 20% White, clear, quartzose, fine to medium grained, sub angular to rounded fair to poor sorted, unconsolidated.

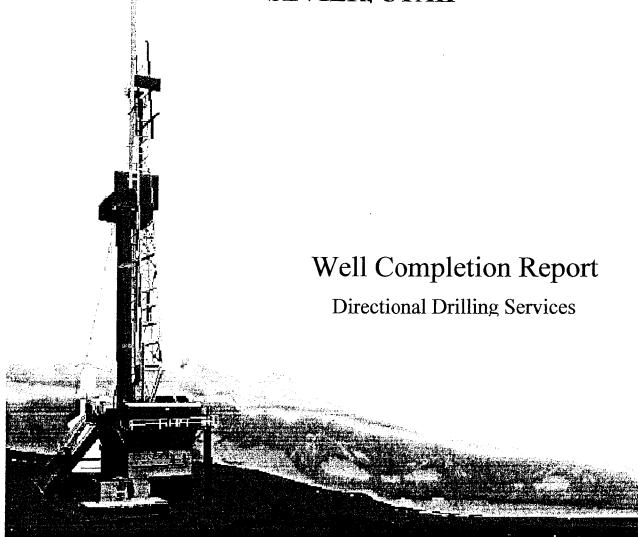
  ANHYDRITE 10% White, chalky, soft to firm.
- SANDSTONE 100% White, clear, quartzose, fine to coarse grained, sub angular to rounded, fair to poor sorted, clay matrix, siliceous cement, 98% unconsolidated, brown oil stain, strong hydrocarbon odor, 12-16% intrgranular porosity, yellow to white oil fluorescence, yellow to white milky cut fluorescence, yellow to gold residual ring cut.
- 7570-7600 SANDSTONE 100% White, clear, quartzose, very fine to coarse grained, sub angular to rounded, fair to poor sorted, clay matrix, siliceous cement, 99% unconsolidated, brown oil stain, strong hydro carbon odor, 12-16% intrgranular porosity, yellow to white oil fluorescence, yellow to white milky cut fluorescence, yellow to gold residual ring cut.

- SANDSTONE 100% White, clear, quartzose, fine to medium grained, sub angular to rounded, fair to poor sorted, clay matrix, siliceous cement, 99% unconsolidated, brown oil stain, strong hydrocarbon odor, 12-16% intrgranular porosity, yellow to white oil fluorescence, yellow to white milky cut fluorescence, yellow to gold residual ring cut.
- SANDSTONE 100% White, clear, quartzose, fine to coarsely grained, sub angular to rounded, fair to poor sorted, clay matrix, siliceous cement, 95% unconsolidated, mixed zone, weaker show, 30% cutting with show, brown oil stain, strong hydrocarbon odor, 12-16% intrgranular porosity, yellow to white oil fluorescence, yellow to white milky cut fluorescence, yellow to gold residual ring cut.
- 7660-90 SANDSTONE 100% White, clear, quartzose, very fine to medium grained, sub angular rounded, fair to poor sorted, clay matrix, siliceous cement, 85% unconsolidated oil water contact, weak to no show.
- 7690-7720 SANDSTONE 100% White, clear, quartzose, very fine to medium grained, sub angular to rounded, fair to poor sorted, clay matrix, siliceous cement, 95% unconsolidated, no show.
- 7720-50 SANDSTONE 100% White, clear, quartzose, very fine to medium grained, sub angular to rounded, fair to poor sorted, clay matrix, siliceous cement, 85% unconsolidated, no show.
- 7750-80 SANDSTONE 100% White, clear, quartzose, very fine to medium grained, sub angular to rounded, fair to poor sorted, clay matrix, siliceous cement, 90% unconsolidated, no show.
- 7780-7800 SANDSTONE 100% Clear, white, fine to medium grained, 90% unconsolidated, sub angular to rounded, fair sorted, clay matrix, siliceous, no show.
- 7800-30 SANDSTONE 100% Clear, white, fine to medium grained, 70% unconsolidated, sub angular to rounded, poor sorted, clay matrix, siliceous, no show.
- 7830-58 SANDSTONE 100% Clear, white, very fine to medium grained, 60% unconsolidated, siliceous, no show.

1944 1947 1948

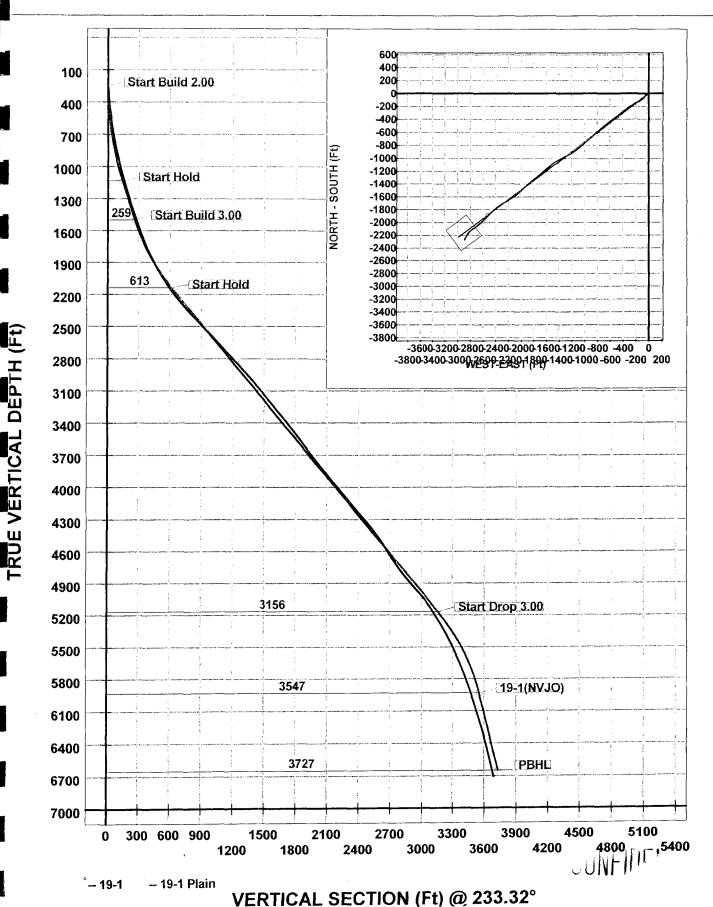


# WOLVERINE GAS & OIL FEDERAL #19-1 SEVIER, UTAH



Company: Wolverine Oil & Gas of Utah, LLC Lease/Well: Wolverine Federal 19-1 Location: Sec 17, T23S, R1W State/Country: Sevier Co. Ut.





Weatherford'

Job Number: WYL0605D080

Company: Wolverine Oil & Gas of Utah, LLC

Lease/Well: Wolverine Federal 19-1

Location: Sec 17, T23S, R1W

Rig Name: Unit # 111

RKB: SHL:798'FSL & 1937'FWL

G.L. or M.S.L.:

State/Country: Sevier Co. Ut.

Declination: 12.82

Grid:

File name: C:\MARSHA~1\ENDOFW~1\WOLVER~1\FE943F~1\19

Date/Time: 23-Aug-05 / 09:23

Curve Name: 19-1

## WINSERVE SURVEY CALCULATIONS

Minimum Curvature Method Vertical Section Plane 233.32 Vertical Section Referenced to Wellhead Rectangular Coordinates Referenced to Wellhead

	Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	N-S FT	E-W FT	Dogleg Severity Deg/100	BUILD RATE Deg/100	WALK RATE Deg/100	
	.00	.00	.00	.00	.00	.00	00	00			
	175.00	.30	263.30	175.00	.40	.00 05	.00 <b>4</b> 6	.00	.00	.00	
	264.00	2.30	262.80	263.97	2.15	05 30	46 -2.46	.17	.17	-55.26	
	357.00	5.30	257.90	356.76	7.69	30 -1.44	-2. <del>40</del> -8.51	2.25	2.25	56	
	447.00	6.70	251.90	446.26	16.44	-3.94	-0.51 -17.57	3.24 1.70	3.23 1.56	-5.27 -6.67	
	538.00	7.20	236.20	536.60	27.17	-8.76	-27.35	2.15	EE	47.05	
	630.00	8.90	223.90	627.70	39.95	-17.10	-27.33 -37.08	2.13	.55 1.85	-17.25	
	720.00	11.30	215.50	716.30	55.22	-29.30	-37.00 -47.03	3.12	2.67	-13.37 -9.33	
	812.00	12.30	218.80	806.36	73.29	- <b>44</b> .27	-58.40	1.31	1.09		
	903.00	13.90	220.20	894.99	93.31	-60.18	-30.40 -71.53	1.79	1.76	3.59 1.54	
	994.00	15.70	221.80	982.96	116.03	-77.71	-86.80	2.03	1.98	1.76	
	1088.00	15.10	234.50	1073.62	140.74	-94.30	-105.25	3.64	64	13.51	
	1182.00	15.90	243.30	1164.21	165.66	-107.20	-126.72	2.64	.85	9.36	
	1277.00	18.40	236.60	1254.99	193.45	-121.30	-150.87	3.35	2.63	-7.05	
	1371.00	17.80	243.40	1344.34	222.42	-135.90	-176.11	2.33	64	7.23	
	1 100 00	00.00									
J	1466.00	20.00	241.90	1434.22	252.78	-150.06	-203.42	2.37	2.32	-1.58	
	1560.00	18.60	243.30	1522.93	283.44	-164.37	-231.00	1.57	-1.49	1.49	
	1652.00	19.60	236.10	1609.88	313.31	-179.57	-256.92	2.78	1.09	-7.83	
ł	1747.00	23.50	236.60	1698.22	348.15	-198.89	-285.97	4.11	4.11	.53	
nd.	1842.00	24.80	237.80	1784.91	386.92	-219.94	-318.64	1.46	1.37	1.26	
1	1937.00	26.10	235.20	1870.69	427.67	-242.48	-352.66	1.80	1.37	-2.74	
	2031.00	30.00	232.70	1953.63	471.86	-268.53	-388.35	4.33	4.15	-2.66	
	2126.00	32.90	232.70	2034.67	521.42	-298.57	<b>-427.77</b>	3.05	3.05	.00	
	2221.00	35.10	232.40	2113.42	574.53	-330.87	-469.94	2.32	2.32	32	
	2315.00	37.40	232.90	2189.22	630.11	-364.58	-514.13	2.47	2.45	.53	
•											

	Measured Depth FT	Incl Angle Deg	Drift Directior Deg	True Vertical Depth	Vertica Section FT		E-W FT	Dogleg Severity Deg/100	BUILD RATE Deg/100	WALK RATE Deg/100
	2380.00 2472.00 2566.00 2661.00	39.00 41.80 42.90 45.20	232.90 233.60 233.10 231.30	2240.30 2310.36 2379.83 2448.10	670.30 729.92 793.24 859.27	-388.83 -424.49 -462.29 -502.79	-546.19 -593.97 -644.77	2.46 3.08 1.22	2.46 3.04 1.17	.00 .76 53
	2755.00	44.60	230.60	2514.69	925.57	-502.79 -544.59		2.76 .83	2.42 64	-1.89 74
	2849.00 2944.00 3039.00	44.20 43.40 42.30	228.50 228.10 230.40	2581.85 2650.42 2720.07	991.18 1056.69 1121.12	-587.25 -630.99 -673.17	-798.51 -847.61 -896.53	1.62 .89	43 84	-2.23 42
	3133.00 3227.00	44.10 43.30	231.10 230.40	2788.59 2856.55	1185.40 1250.27	-713.87 -754.96	-946.37 -996.66	2.01 1.98 .99	-1.16 1.91 85	2.42 .74 74
	3322.00	42.20	230.10	2926.31	1314.67	-796.19	-1046.24	1.18	-1.16	32
	3416.00	40.80	229.90	2996.71	1376.85	-836.23	-1093.95	1.50	-1.49	21
	3511.00	40.20	232.60	3068.95	1438.49	-874.84	-1142.05	1.95	63	2.84
	3605.00	41.10	240.50	3140.32	1499.52	-908.51	-1193.08	5.56	.96	8.40
	3707.00	40.80	242.20	3217.36	1565.71	-940.56	-1251.74	1.13	29	1.67
	3801.00	39.80	244.10	3289.05	1625.61	-968.02	-1305.97	1.69	-1.06	2.02
	3896.00	39.80	242.90	3362.04	1685.46	-995.16	-1360.39	.81	.00	-1.26
	3990.00	39.40	240.50	3434.47	1744.73	-1023.55	-1413.14	1.68	43	-2.55
123	4085.00	37.50	235.90	3508.88	1803.55	-1054.62	-1463.34	3.61	-2.00	-4.84
	4179.00	37.10	232.60	3583.67	1860.49	-1087.89	-1509.56	2.17	43	-3.51
	4273.00	38.20	229.70	3658.10	1917.85	-1123.91	-1554.26	2.22	1.17	-3.09
	4367.00	38.30	229.60	3731.92	1975.93	-1161.59	-1598.61	.13	.11	11
	4462.00	38.50	230.10	3806.37	2034.83	-1199.63	-1643.71	.39	.21	.53
	4556.00	38.50	231.10	3879.93	2093.27	-1236.78	-1688.93	.66	.00	1.06
	4650.00	40.10	230.80	3952.67	2152.76	-1274.28	-1735.16	1.71	1.70	32
	4744.00 4838.00 4933.00 5027.00	40.30 40.40 40.60 42.10	230.40 229.20 229.70 230.10	4024.47 4096.11 4168.35	2213.36 2274.11 2335.66	-1312.80 -1352.08 -1392.19	-1782.04 -1828.53 -1875.41	.35 .83 .40	.21 .11 .21	43 -1.28 .53
	5122.00	41.20	229.70	4238.91 4309.89	2397.65 2460.67	-1432.19 -1472.85	-1922.91 -1971.20	1.62 .99	1.60 95	.43 42
	5216.00 5311.00 5405.00 5500.00 5594.00	39.80 36.00 30.90 33.00 34.00	227.80 229.00 233.30 238.00 239.60	4381.37 4456.32 4534.74 4615.36 4693.74	2521.52 2579.65 2631.37 2681.56 2733.20	-1513.09 -1551.84 -1584.42 -1612.71 -1639.58	-2017.11 -2060.72 -2100.95 -2142.46	1.99 4.07 5.98 3.43	-1.49 -4.00 -5.43 2.21	-2.02 1.26 4.57 4.95
	5689.00	36.10	238.50	4771.51	2787.49	-1667.64	-2186.84 -2233.62	1.42 2.31	1.06 2.21	1.70 -1.16
	5783.00	40.70	235.50	4845.16	2845.73	-1699.49	-2282.52	5.28	4.89	-3.19
	5878.00	40.80	233.40	4917.14	2907.72	-1735.54	-2332.97	1.45	.11	-2.21
	5972.00	40.50	234.50	4988.45	2968.95	-1771.58	-2382.47	.83	32	1.17
	6067.00	39.40	232.00	5061.29	3029.94	-1808.06	-2431.35	2.05	-1.16	-2.63
	6160.00	36.10	228.10	5134.82	3086.75	-1844.54	-2475.02	4.38	-3.55	-4.19
	6256.00	32.80	223.60	5213.99	3140.57	-1882.28	-2514.02	4.34	-3.44	-4.69
	6350.00	31.10	223.80	5293.74	3189.61	-1918.24	-2548.38	1.81	-1.81	.21
T.	6444.00	28.90	225.20	5375.15	3236.05	-1951.77	-2581.31	2.46	-2.34	1,49
	6546.00	25.40	227.30	5465.89	3282.22	-1983.99	-2614.88	3.56	-3.43	2.06

Page 2

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	Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Vertical Section FT	N-S FT	E-W FT	Dogleg Severity Deg/100	BUILD RATE Deg/100	WALK RATE
	6640.00 6735.00 6861.00 6962.00 7007.00	23.60 22.70 20.80 19.90 18.90	229.70 232.00 235.20 234.70 233.10	5551.43 5638.78 5755.81 5850.51 5892.95	3321.05 3358.36 3405.03 3440.14 3455.08	-2009.83 -2033.42 -2061.16 -2081.32 -2090.13	-2644.05 -2673.00 -2710.53 -2739.29 -2751.37	2.19 1.34 1.78 .91 2.52	-1.91 95 -1.51 89 -2.22	2.55 2.42 2.54 50 -3.56
	7095.00 7190.00 7284.00 7379.00 7473.00	17.90 18.20 17.20 16.40 16.90	231.30 232.40 225.70 216.70 215.30	5976.45 6066.78 6156.33 6247.29 6337.35	3482.85 3512.27 3540.73 3567.51 3593.22	-2107.14 -2125.32 -2143.99 -2164.55 -2186.34	-2773.32 -2796.47 -2818.05 -2836.12 -2851.95	1.31 .48 2.41 2.86 .68	-1.14 .32 -1.06 84 .53	-2.05 1.16 -7.13 -9.47 -1.49
[[	7568.00 7662.00 7757.00 <b>Projection</b>	16.20 15.20 14.20	208.50 205.10 207.20	6428.43 6518.92 6610.81	3618.38 3641.14 3662.58	-2209.26 -2231.94 -2253.59	-2866.25 -2877.74 -2888.34	2.17 1.45 1.19	74 -1.06 -1.05	-7.16 -3.62 2.21
	7858.00	14.20	207.20	6708.72	3684.82	-2275.62	-2899.67	.00	.00	.00

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